INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC GUTTA-PERCHA

Reg. United States Pat. Off. Reg. United Kingdom.

Published on the 1st of each month by

THE INDIA RUBBER PUBLISHING CO.

No. 25 West 45th Street, New York.

Telephone—Bryant 2876.

CABLE ADDESS: IRWORLD, NEW YORK.

HENRY C. PEARSON, Editor

Vol. 53. DECEMBER 1, 1915. No. 3

SUBSCRIPTIONS: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft or Postoffice or Express money order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

DISCONTINUANCES: Yearly orders for subscriptions and advertising are regarded as permanent, and after the first twelve months they will be discontinued only at the request of the subscriber or advertiser. Bills are rendered promptly at the beginning of each period, and thereby our patrons have due notice of continuance.

COPYRIGHT, 1915, BY THE INDIA RUBBER PUBLISHING CO.
Entered at the New York postoffice as mail matter of the second class.

TABLE OF CONTENTS ON LAST PAGE OF READING.

THE CRUDE RUBBER GUESSING CONTEST.

FROM a normal and fairly satisfactory price level of 62 cents, First Latex Crêpe has suddenly risen to 83 cents, and that without apparent cause. Those who buy, and eke those who sell, particularly the latter, are trying to tell the reason why. These guesses, for as yet they are nothing else, are of more than academic interest. They follow along in order about like this:

The Suez Canal is closed, or about to be closed, deflecting or holding up rubber cargoes for some weeks.

Several of the great tin and rubber carriers have been torpedoed and sunk in the Mediterranean.

The British Government has suddenly commandeered five to ten thousand tons of rubber.

British firms having German affiliations have placed large orders for rubber, thus incidentally suggesting an early peace.

A longer delay in the clearing of the Panama Canal than was expected.

Serious conditions in Ceylon and the Malay States because of native uprisings.

The presence of big rubber buyers in the Far East who are placing large orders for future delivery.

The fact that the big manufacturers have been out of the market for months and that they have at last begun to buy largely.

All of the above are guesses, and as such are equally valuable.

The fact remains, however, of the unexplained advance in plantation sorts, and the sympathetic rise in the prices of Brazilian rubber and rubber scrap.

Verily, with higher rubber, more costly cotton and compounding ingredients at prohibitive prices, some slight advance in prices of manufactured goods is in order.

DEARTH OF COMPOUNDING INGREDIENTS.

CAN the American rubber trade face the new year confidently so far as chemicals and compounding ingredients are concerned? Will our sources of supply suffice in 1916, and will the prices be reasonably steady? These are questions that have been asked frequently of late; and we have made a survey of the field and sought the opinions of men qualified to speak authoritatively. In our columns elsewhere the results are given at some length; and the prospect for some of the important materials is decidedly unpromising.

However, there is this to be remembered: none of the ingredients that are becoming so scarce and costly are absolute necessities. Other colors, different compounds, a great variety of substitutions will enable the rubber manufacturers to turn out goods just as acceptable as of yore. And in due time all of the high-priced ingredients will be made in our factories.

RUBBER AND COMPOUNDING RESERVES.

SOME time ago the price of crude rubber reached the high mark of three dollars a pound. There were those, chiefly rubber producers, who believed that it would remain there for a period of years at least. Just at that time, however, there came into the market enormous quantities of rubber scrap, notably motor tires, which under improved reclaiming processes became crude rubber and proved one of the great factors in driving the price down to a reasonably low figure. Thus the rubber

manufacturers were not without a reserve to call upon in times of stress.

A similar condition exists today in respect to various compounding ingredients. Many are scarce, or held at prohibitive prices. There is, however, a vast amount held in reserve in the world's scrap rubber. White scrap may be turned into white rubber again. Antimony stocks may be reclaimed, and so on. All that is needed is a little more careful sorting. The reserve is there for use until prices come down again.

RUBBER MANUFACTURE AND HEALTH.

THE bare suggestion to the old timer that rubber manufacture was anything but healthful would be received with scorn. Nay, facts, incontrovertible so far as rule of thumb reasoning went, could be adduced to support the theory of healthfulness. For example, in the first of the big rubber shoe factories, compounds were known as "paints". They were made up of whiting, lampblack, lime, barytes, white lead, litharge and sulphur. All of these were mixed together in a large bin, by a man with a hoe, and then run through burr mills to ensure further mixing and a greater degree of fineness. The men who did the hoeing and the burr mill mixing, ate, breathed, and absorbed the powders, but that they were anything but healthy would be strenuously denied. Indeed, if we listen to factory tradition, rubber work is very healthful. When other and nearby industries are afflicted with smallpox, scarlet fever, German measles and the like, how very often it happens that the rubber mills are immune. The workman explains it by the presence of sulphur in the air, and also hazards the idea that "bugs" will not live with naphtha and similar fumes. There is also a superstitition among old rubber men that while lightning may smite almost any building, even a church, it never strikes a rubber factory.

There has ever been a sort of half knowledge in the trade that litharge might induce lead poisoning. But the cases where it was known were few and far between. Workers also were made slightly sick by naphtha fumes, but they recovered quickly and were properly ashamed of themselves afterward.

Chloride of sulphur was ever recognized as poisonous, and even in the smallest dipping shops the workers were protected from its fumes as much as possible. In fact, few until quite recently used the cold cure.

As for the commoner ingredients, the chalks, talcs, oils, gums and waxes, as well as the evil-smelling rubber, the workmen were steeped in and powdered with them all, and lived to ripe old age in spite of them.

That is why, when rumors of investigations were heard, they were so scornfully received.

Nevertheless, on the part of the efficiency men and the big manufacturers, and the rubber chemists there was nothing but welcome for the government investigator who hunted down possible poisons in compounds and the poisoned among workmen. Now that the report has been handed in and scanned it shows the trade to be in good shape. Where harmful ingredients are used the men are pretty generally guarded. When they are not, the suggestions in the report point a way toward absolute safety.

GOODRICH GOOD ENGLISH.

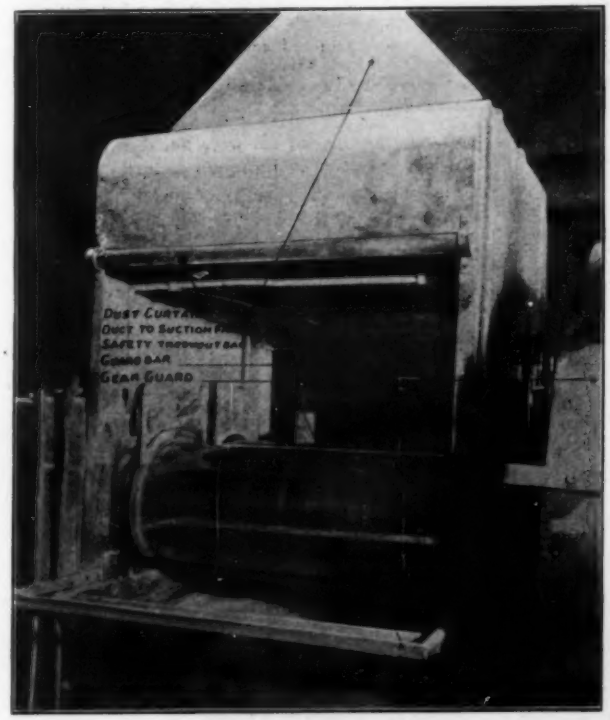
AS "The Sun," New York, is noted among newspapers for its correct and sonorous English, so is The B. F. Goodrich Co. noted among rubber manufacturers. This reputation dates from the time, some years ago, when instead of writing "we are sending in same mail," as was usual, they put it, "we are forwarding by correlative post." Their latest bid for super-excellence in English is a tire tread made of "Hyper-Rubber." Lexicographers are more or less familiar with "Hyper" as an anti-skid on such smooth tread words for example as critical, and sensitive. It means in effect a little bit more than the most, better than the best. If the Goodrich Hyper-Rubber is really what its name implies, the compound must be a Hyper-Hummer.

MR. JOHN P. LYONS, FOR FOUR YEARS PAST ASSOCIATE editor of THE INDIA RUBBER WORLD, resigned his position early in November and will spend the winter in Southern California. His many friends trust that the change of climate will be of great benefit, both to his invalid wife and to Mr. Lyons himself.

THE RUBBER COVERED WIRE ENGINEERS' ASSOCIATION was perhaps the oldest rubber club in the United States. At all events it was started one year before the New England Rubber Club. It now comes into prominence by merging its identity with that of the Associated Manufacturers of Electrical Supplies. This adds strength to both organizations, and is where the older association belongs, together with all of the cable, conduit, storage battery and insulation manufacturers.

Industrial Poisons in Rubber Manufacture.

IT has long been known that some of the solvents and compounding ingredients used in rubber manufacture are injurious to health. It is also a fact that, to the best of their ability, many rubber manufacturers have guarded against deleterious dust and fumes wherever poisonous ingredients were used. Up to the present time, however, that work has been individual, as there has been no general knowledge upon which to base preventive measures. The Bureau of Labor Statistics of the United States, in its investigation of Industrial Accidents and Hygiene, has taken up the subject and reported upon it very thoroughly. This report is in the form of an illustrated bulletin of 64 pages, written by Alice Hamilton, A.M., M.D., and is the result of two years personal investigation of the leading rubber factories of the United States.*



A PROTECTED MIXING MILL.

Thirty-five factories in the following cities: Boston, Massachusetts, including three suburbs; Hudson, Massachusets; Providence, Rhode Island; New Haven and Naugatuck, Connecticut; Tuckahoe, New York; Trenton and Lambertville, New Jersey; Akron, Ashland, Cleveland, and Youngstown, Ohio; Detroit, Michigan; Mishawaka, Indiana; and Chicago, Illinois, were visited and investigated. The lines covered were: Footwear, Mechanical Rubber Goods, Tires, Druggists' Sundries and Toys, Hard Rubber, Proofing and Rubber Reclaiming. The departments investigated in general were the compounding room; the mixing mills for dry compounding, solution mixing, spreading and dipping, while under vulcanizing; the dry heat, steam heat, press work, and especially the acid and vapor cures being taken up in order.

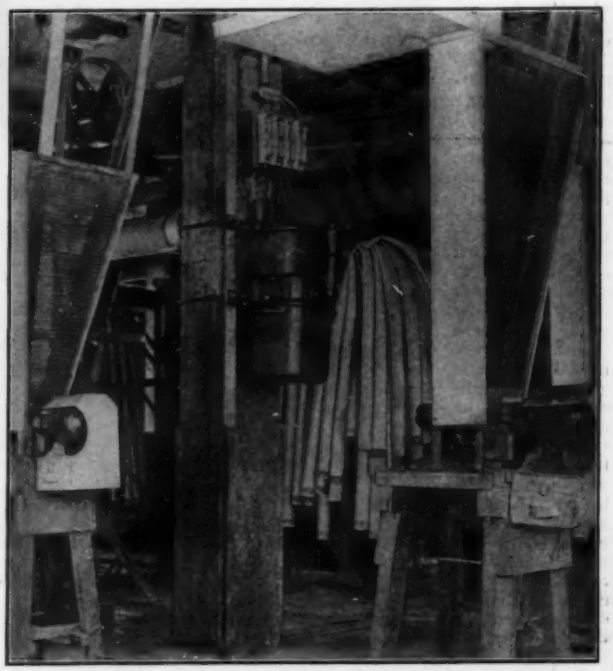
The poisonous substances listed are litharge, sublimed lead, basic carbonate of lead, red lead, antimony pentasulphide and trisulphide, aniline oil, naphtha, benzine, coal tar benzol, carbon disulphide, and carbon tetrachloride.

Of the lead compounds, the most dangerous is said to be white lead, although litharge is nearly as bad. Sublimed white lead is not as poisonous as either of the two mentioned, but is poisonous if handled carelessly or inhaled as dust. Lead poisoning is brought about by breathing lead-contaminated air, by eating food or chewing tobacco that has been handled by lead-smeared hands.

LEAD POISONING AMONG RUBBER WORKERS.

Quoting from Dr. Hamilton's report:

Lead poisoning is essentially a chronic disease marked by acute attacks. The development of the symptoms is slow and insidious, and by the time they become acute the man has absorbed a good deal of the poison, and recovery from the acute symptoms does not mean that he is free from chronic plumbism. The first symptoms usually noted are loss of appetite, a disagreeable taste in the mouth, indigestion, loss of strength, constipation, more or less insomnia and headache. An acute attack is usually ushered in by obstinate constipation and is characterized by agonizing colic. In other cases it is the nervous system chiefly that is affected. Insomnia, headache, weakness of the muscles most often used, chiefly of the extensors of the wrist, attacks of mental confusion, even loss of consciousness and convulsions, are the symptoms in this type of cases, and they may or may not be accompanied by typical lead colic. Aside from these acute attacks, a slow chronic change takes place in the lead-poisoned workman, leading to profound anemia, hardening of the blood vessels, and alterations in such organs as the kidneys, liver, and heart, and to more or less permanent paralysis of forearms or ankles. There are many other changes which may be brought about by lead poisoning, but the above is a description of the more typical forms.



MACHINE FOR ROUGHENING ENDS OF INNER TUBES.

Records were secured of 66 cases of lead poisoning in rubber works during 1914, distributed among the various branches of the trade as follows: tires 27, footwear 9, clothing 6, druggists'

*Bulletin of the United States Bureau of Labor Statistics No. 179. By Alice M. Hamilton, A.M., M.D. Industrial Poisons Used in the Rubber Industry.

supplies 3, mechanical rubber 1, factories making all kinds of goods 20. These men were working in the compounding and mill rooms. The greater number had been employed more than a year, but one compounder had worked only 3 months, another 9 months, and a third 11 months before they were taken ill. The men who had worked for longer periods showed evidence of chronic plumbism.

ANTIMONY SULPHURETS.

No physician was found who had absolutely recognized a case of antimony poisoning in a rubber worker. Dr. A. J. Carlson, of the Hull Physiological Laboratory of the University of Chicago, was furnished by Dr. Geer of The B. F. Goodrich Co., with samples of crimson sulphuret of antimony and golden sulphuret of antimony. He found them soluble in human gastric juice. Symptoms of antimonial poisoning are as follows:

Abdominal pain, nausea, loss of appetite, dysenteric attacks, sores in the mouth, salivation, wasting, weak heart, attacks of dizziness, and albuminuria or glycosuria. In the rubber industry the golden sulphide is handled in large quantities and usually with the utmost recklessness. One can see men powdered with it from head to foot. The fact that no physician who was interviewed had ever seen what he recognized as a case of antimony poisoning in a rubber worker is not very significant, because the symptoms of antimony poisoning could easily be masked by or mistaken for the symptoms of lead poisoning, since both chemicals are used in the compounding rooms and on the mixing mills.

ANILINE OIL.

Dr. Hamilton found one physician attached to a large plant who had observed over 100 cases of aniline poisoning. In this plant hoods have been installed to carry off the fumes. The men have been instructed to watch for the warning symptoms and then to go out into the open air at once, and he now has only slight cases.

Industrial poisoning from aniline oil is well known, for many cases have occurred in the great German factories in which aniline derivatives are made. The oil is a volatile poison affecting the nervous system and acting destructively upon the red blood corpuscles. The first symptom of aniline poisoning is pallor, which soon changes to a striking bluish color, especially in the lips. There is usually severe headache and general weakness and, if the exposure to the fumes continues, loss of consciousness which may be prolonged alarmingly. The breath and the urine smell of aniline and the blood shows changes due to the withdrawal of oxygen and the destruction of the red blood cells.

DEODORIZING ROOM.

Aniline oil vaporizes at room temperature and is absorbed chiefly through the respiratory tract, but may be absorbed also through the skin. In the rubber industry the men are exposed to the fumes of aniline in the compounding room, where it is kept and measured out, and in the mill room, where it is poured over the rubber in the mixing mills or in the "warm-up" mills. The cylinders of these mills are heated to soften the rubber, and the heat aids in volatilizing the aniline. Even the rubber on the calenders may give off fumes of aniline.

Acute aniline poisoning, both mild and severe, is not at all uncommon in Akron, and not only workmen, but physicians, speak of the victims as "blue men," or "blue boys," because the most distinctive symptom is the intense cyanosis. It is said that severe cases used to occur quite often a few years ago when aniline was first introduced into the Akron plants, and the doctors did not at once recognize which was the chemical responsible for the trouble. Since that time serious efforts have been made in some plants to protect the users from fumes. The first record of aniline poisoning in the rubber industry in this country seems to be that contained in the recent report of Dr. E. R. Hayhurst, of the Ohio State Board of Health. Dr. Hayhurst found three cases of aniline poisoning in the compounding and milling departments of rubber factories in Ohio.

Most of the information gathered concerning cases of aniline poisoning in Akron dated back several years, to the time when the danger was not appreciated and safeguards not yet introduced.

COAL TAR BENZOL.

No cases of poisoning by this solvent were noted in American factories. Several were reported in European factories.

Benzol is not used nearly so much in the United States as in Germany. It is twice as expensive as petroleum in this country, while in Germany and Austria it is somewhat cheaper than petroleum. A very complete study, both historical and experimental, on the effects of the vapors of coal-tar benzol and petroleum naphtha and benzine as used in industrial processes was made by K. B. Lehmann and his assistants in the University of Wurzburg. Benzol is a product of the distillation of coal tar or coke, passing over at about 90 degrees to 95 degrees C. (194 degrees to 203 degrees F.). The commercial variety is about 85 per cent. pure. Lehmann's experiments on animals showed that the fumes of benzol cause irritation of the mucous membranes of throat and larynx, and of the eyes; muscular twitchings, and, later, convulsions, unconsciousness, fall of body temperature, and death from respiratory paralysis. The same symptoms have been noticed in cases of violent acute poisoning in human beings who have entered vats containing benzol or spilled large quantities of it and inhaled the fumes, but the poisoning that occurs in rubber factories is neither so rapid nor so intense and the symptoms are not so typical.

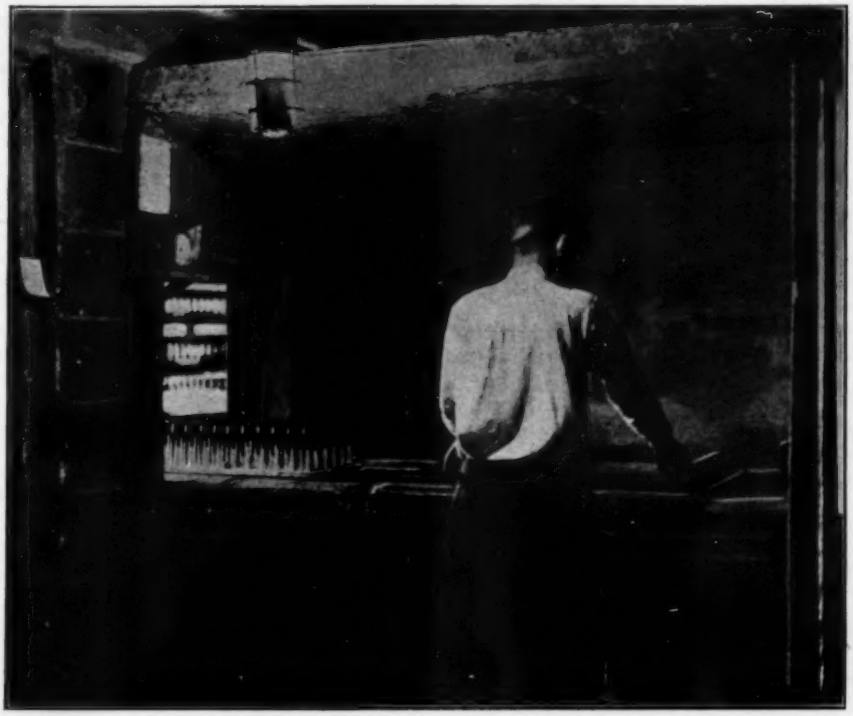
ACUTE PETROLEUM POISONING.

One case was reported of a man who worked in a dipping room.

The symptoms of poisoning by benzine vapors are usually given as headache, nausea, stupid feeling, heaviness or sleepiness, roaring in the ears, inclination to cough, feeling of irritation and constriction in the throat, trembling of the hands and arms, sensation of crawling over the skin, excitement or irritability. Girls are said to grow very talkative and foolish and laugh a great deal; men are said to be easily provoked to anger and are unreasonable. These symptoms may be felt most intensely during the first hours of the day, but in other cases they come on when the person leaves work and goes out into the open air. The workpeople call an acute attack of such poisoning a "naphtha jag."

Rarely is the severe acute form of benzine poisoning seen in this country except in places such as oil wells and refineries, where the exposure to fumes is great. Occasionally, however,

a severe case may occur among the men employed in the naphtha churning rooms of a rubber factory, for when many different kinds of cement are used the churns have to be cleaned out, and the fumes of naphtha may be heavy enough to overcome the workmen who do this. Another place where severe naphtha poisoning may occur is in the dipping room. The men here work over large tanks filled with thin rubber cement and the temperature of the room is kept at 90 to 98 degrees F., to hasten the evaporation of the naphtha. A case of this sort from a dipping room was reported to us by a physician in an Ohio town. The patient, a strong man, was found by the physician lying in bed comatose, with cold skin, pale, and almost pulseless. He had been dipping wooden forms of gloves into the tank of cement and had felt so dizzy and ill that he was obliged to leave work and go home, but on the way he began to stagger and would have fallen had not two men half carried him home. He was put to bed and not till then did he lose consciousness. His illness lasted several days, but he recovered completely, never, however, venturing to go back to the same sort of work.



ACID CURING OR COLD CURING OF BALLOONS.

CHRONIC NAPHTHA POISONING.

The author, after referring to British records, turns to a report of the Massachusetts General Hospital, 1913-1914. A number of rubber workers applied for treatment for various disorders. The supposition was that they were caused by benzine poisoning, but the records are not regarded as being beyond doubt. Several cases of rubber workers who made or used rubber cement are cited, however, by Dr. Hamilton, which would seem to prove the poisonous effect of the fumes on certain workmen. She says:

As for symptoms, the workpeople claim that they taste naphtha all the time and that this destroys their appetite for food. An attack of "naphtha jag" is succeeded by a stage of depression and dullness, with clouded memory, and on the following day headache, loathing for food, and a feeling of exhaustion.

CARBON DISULPHIDE.

The extremely dangerous character of this compound is discussed at some length, the facts being gathered in European rubber factories. Few physicians in the United States seem to have recognized this poison or its properties. Dr. Hamilton gives several cases of poisoning from this solvent, the following being typical:

The two most dangerous poisons which are encountered in the rubber industry are used in the so-called acid cure or cold cure and in the vapor cure, processes by which sulphur in the form of the monochloride is introduced into the rubber. It is not the monochloride itself that is dangerous, for, according to Lehmann, who tested it experimentally, sulphur monochloride causes nothing more than an irritation of the conjunctiva and of the mucous membranes of nose and throat. The danger is in the addition of carbon disulphide or carbon tetrachloride or benzol, and these are poisonous in the order mentioned.

Most of the physicians in our rubber-manufacture towns do not seem to have even heard of the use of carbon disulphide in the rubber industry, nor are they familiar with its toxic properties, consequently it is very hard to determine whether or not our way of using it results in serious trouble. It is certainly possible that the insane asylums have received cases of unrecognized carbon disulphide psychosis, since insane rubber workers are committed from these towns without any inquiry being made as to the exact occupation of the patient and the possible industrial source of his disease. Most of the cases of poisoning discovered in the course of this inquiry were described by foremen of factories, only a few by physicians.

The foreman of the cold-curing department of a dipped-goods factory was very eloquent on the subject of carbon disulphide poisoning. He said his men used to go crazy from the fumes until he made them work for short spells only, alternating with other work. During the preceding year he had had 12 men under him and all had felt the effects in some way, complaining of headache and dizziness, or indigestion, or loss of mental power, or loss of memory, or muscular weakness, especially in the legs. He himself suffered a good deal from dizziness and severe occipital headache, and had lost strength. He said he always felt the effects of the fumes most at the beginning of the week or after a vacation. Sleeplessness was one of his chief complaints, while one of his workmen said that the fumes made him drowsy all the time—he could drop off to sleep whenever he sat down.

CARBON TETRACHLORIDE.

This, as a rule, has been thought to be not particularly harmful. Investigation in European factories, however, proved it to be distinctly poisonous. The report on the American factories is as follows:

In the effort to avoid the fire risk from carbon disulphide fumes several American rubber factories are now using the non-inflammable carbon tetrachloride, which is, however, not as powerful a rubber solvent as carbon disulphide and is more expensive. Superintendents and chemists in the factories where the former is used are apparently ignorant of its harmfulness, and this is hardly to be wondered at since the ordinary textbooks of toxicology do not even mention it, and the few that do have very little to say about it. Von Jaksch speaks of severe nervous disturbances having occurred among workmen who used a mixture containing carbon tetrachloride on the inside of boilers to prevent incrustations. Gadamer simply states that this substance is used in industry and may cause poisoning with symptoms like those of chloroform.

Carbon tetrachloride was found actually in use in only three factories. In one of them a man who had dipped rubber goods in a solution for seven months complained of nausea and loss of appetite, which he attributed to his occupation. In another,

a tire factory where the liquid is painted on the ends of inner tubes, a workman stated that since he had been doing this sort of work he had lost weight and that he felt a constant irritation of the eyes, nose, and throat. In the third factory two splicers believed that their health had suffered from the effects of the carbon tetrachloride vapors. One, especially, said that he had lost many pounds in weight, that he had nausea and loss of appetite, vomited frequently, and felt weak all over. The men who do the work without wearing gloves are liable to a dermatitis of the hands and arms.

Dr. Hamilton finds that in many of the factories using the poisonous ingredients under consideration great care has been taken to keep the workers from coming in contact with these substances. In many others, however, she finds that little or no attention has been paid to the matter. She suggests arrangements in the compounding room so that dust from the lead and antimony compounds be obviated. This may be done by automatic weighing appliances, closed receptacles and avoidance, as much as possible, of personal contact in handling.

For poisonous ingredients, mixing mills should be fitted with powerful exhaust hoods and arrangements whereby the worker neither directly handles nor breathes the dust.

In using ingredients or solvents which give off injurious fumes, exhaust hoods, perfect ventilation, closed cans and cups are advised.

In other words, if the workman is protected against breathing the fumes, inhaling or handling poisonous dust, the danger of poisoning is reduced to a minimum.

The whole report is not only timely, but is exceedingly clear and comprehensive. Dr. Hamilton has wonderfully grasped the general details of rubber manufacture, which is shown by the complete avoidance of the usual minor but irritating technical blunders that writers not themselves rubber experts are so prone to indulge in.

RUBBER AS RELATED TO THE WAR.

A VERY interesting lecture, illustrated by lantern slides, was given on November 9 by A. D. Thornton, of the Canadian Consolidated Rubber Co., Limited, before the Canadian Railway Club, at Montreal, Canada. Mr. Thornton said in part:

"Now, as to rubber and its uses in the great European war. Well, there is hardly any detail of equipment in which it does not figure. First and foremost is the use of automobile and truck tires; the consumption here is enormous. Huge quantities are manufactured by the Allies, then again factories in Canada and the United States are running overtime on these lines; hip boots for the men in the trenches are being manufactured for the coming winter; one million waterproof capes were recently ordered by the British Government. Ground sheets are used for almost any purpose; the men lie upon them when firing, sleeping, etc., also when tents are cleared out in the morning all the blankets, clothing, etc., are placed on one of these sheets, spread on the ground. If the British force is 3,000,000 men, and every man had a sheet, the weight would be 3,750 tons. In the hospitals we find rubber sheeting, air cushions, hot water bottles, ice bags, drainage tubes and many other surgical instruments.

"But now let me come to the point where rubber must be used; where it is absolutely essential.

"There is no explosive made from rubber, but I am quite safe in saying that without the assistance of rubber no explosives could be manufactured.

"In the manufacture of dynamite, which is an infusorial earth saturated with nitro-glycerin, rubber is very essential. Nitro-glycerin is both a poison and a tonic, and in the hot weather the operators perspire freely, and unless they use rubber gloves, the tonic exudation enters the system and it is quickly poisoned. In addition to gloves, they must wear rubber boots.

"The manufacture of 'Smokeless' calls for the use of rubber in almost the same way. The base is cotton waste, which, when saturated with nitric acid, undergoes a chemical change. It becomes an explosive, and is called gun cotton. The cotton is cleaned in an alkali bath, to remove all traces of grease, and then all moisture is removed, and the cotton placed in air-tight cylinders to prevent it re-absorbing atmosphere. Rubber gaskets have to be used on these cylinders.

"There are, I am advised by competent authority, about one hundred and forty thousand men manufacturing explosives for use in the war, every one of whom is forced to wear rubber boots, coats, gloves, etc.

"The use of balloons in the war is well known to us all. Here again rubber is used extensively.

"The Zeppelin is filled with gas bags, which are made of rubber. The outer coat of the balloon is also covered with rubber. The Parseval and the Lebaudy are really immense gas bags, with balloonet chambers on the inside.

"But it is in the use of automobiles, ambulance cars, guns, trucks, etc., that the use of rubber comes into notice as to quantity. I have been at great pains to obtain figures as to the consumption of all the armies on the continent now at war, and it would seem that between three and four thousand tons of rubber goods are destroyed daily, and it is unquestionably growing larger. This winter hip boots will be used in the trenches. One firm in England received an order for 2,000,000 pairs, weighing about 7,000 tons. When you consider the armies of other nations, you are astounded at the tonnage which must be in demand."

NATIONAL EXPOSITION MANAGEMENT ENTERTAINS CHEMISTS.

A notable gathering of well-known industrial chemists met at the Chemists' Club, 52 East Forty-first street, New York, Wednesday evening, November 10, 1915. The occasion was a dinner tendered by the management of the exposition, to discuss plans for the 1916 National Exposition of Chemical Industries.

Among those present were: Raymond F. Bacon, Charles H. Herty, Henry B. Faber, A. D. Little, E. F. Roeber, George D. Rosengarten, T. B. Wagner, L. H. Baekeland, M. C. Whitaker, B. C. Hesse, Adriaan Nagelvoort and Charles F. Roth; also R. G. Hollaman and F. W. Payne, of the International Exposition Co., all of whom will serve on the advisory committee for the 1916 National Exposition of Chemical Industries to be held at the Grand Central Palace, New York, week of September 25, 1916. At this meeting Dr. Charles H. Herty was elected to serve as chairman of this committee for the coming year.

An advisory committee was selected, and preliminary plans laid for enlarging the size and scope of the coming exposition.

RED CROSS CANNOT SEND RUBBER GOODS TO GERMANS.

Presumably on the ground that they might be used for military purposes, Great Britain refuses to allow shipment to Germany and Austria of hospital supplies, gloves and blankets, there being a possibility of such goods being reclaimed and used in the manufacture of tires, of which the powers in question are in such urgent need. If, in spite of the assurance of Ambassador Gerard at Berlin, and the American Red Cross Society, that the goods would be used only for hospital purposes, the British authorities still refuse the right of shipment, the American Red Cross would naturally have to suspend such shipments to all countries.

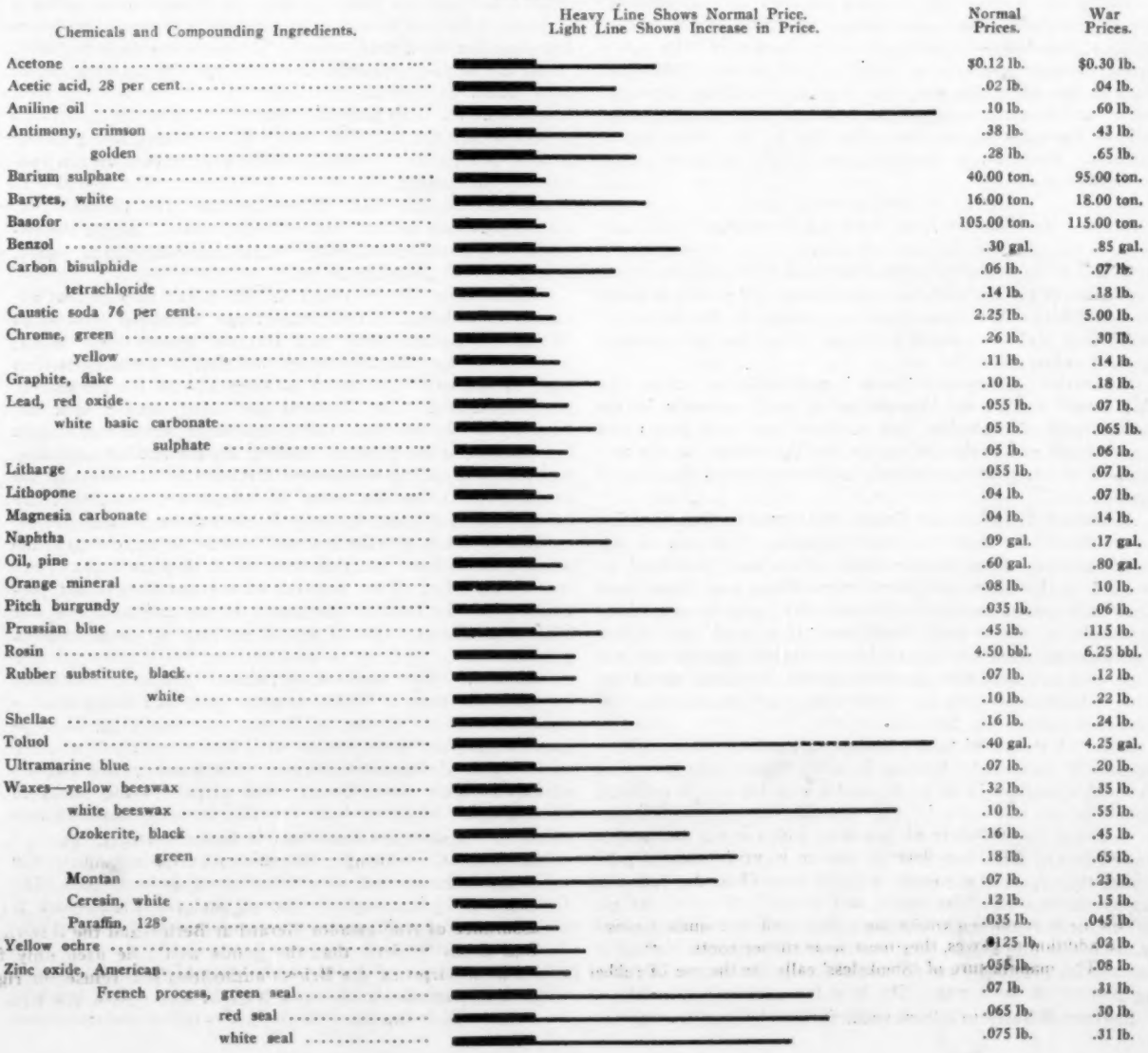
Effect of the War on Chemicals and Compounding Ingredients.

TO those interested, it might seem that the war had made a special target of the rubber industries. In many directions prices have mounted, some of them pretty well skyward, and there are those in the chemical market that freely predict still higher prices. This is certainly not reassuring. Happily, there are sources of information that promise betterment in some important departments, but for the present the producer should be wary of chasing rainbows. On the whole, rubber manufacturers should not be optimistic as to quantities and prices.

A casual review of the situation today indicates that there are special ingredients that the compounder may have to abandon, and no time should be lost in seeking for reasonably satisfactory substitutes. In some cases this prospect is discouraging, particularly where the trade is using for certain goods ingredients that have peculiar properties and rank way ahead of any second best. The research chemist will have his hands full, but perhaps the spur of necessity may bring abundant reward in the end. This is one of the phases of the situation, and is mainly, though not entirely, the consequence of a stoppage of foreign supplies.

Unquestionably the biggest factor in raising prices and reducing or cutting off needful materials is the military demand from abroad. Munitions and fighting tools generally make the heaviest drain, but there are allied phases of warfare that call for their portion, and one of these is in the medical requirements of this awful struggle. The rise in the cost of zinc oxides was immediately the outcome of the greatly increased use of brass. Millions upon millions of cartridges have been turned out for small arms and machine guns, and still larger

NORMAL PRICES VS. WAR PRICES.
NOVEMBER, 1915.



Chemicals and Compounding Ingredients.	Normal Prices.	War Prices.
Acetone	$0.12 lb.	$0.30 lb.
Acetic acid, 28 per cent	.02 lb.	.04 lb.
Aniline oil	.10 lb.	.60 lb.
Antimony, crimson	.38 lb.	.43 lb.
golden	.28 lb.	.65 lb.
Barium sulphate	40.00 ton.	95.00 ton.
Barytes, white	16.00 ton.	18.00 ton.
Basofor	105.00 ton.	115.00 ton.
Benzol	.30 gal.	.85 gal.
Carbon bisulphide	.06 lb.	.07 lb.
tetrachloride	.14 lb.	.18 lb.
Caustic soda 76 per cent	2.25 lb.	5.00 lb.
Chrome, green	.26 lb.	.30 lb.
yellow	.11 lb.	.14 lb.
Graphite, flake	.10 lb.	.18 lb.
Lead, red oxide	.055 lb.	.07 lb.
white basic carbonate	.05 lb.	.065 lb.
sulphate	.05 lb.	.06 lb.
Litharge	.055 lb.	.07 lb.
Lithopone	.04 lb.	.07 lb.
Magnesia carbonate	.04 lb.	.14 lb.
Naphtha	.09 gal.	.17 gal.
Oil, pine	.60 gal.	.80 gal.
Orange mineral	.08 lb.	.10 lb.
Pitch burgundy	.035 lb.	.06 lb.
Prussian blue	.45 lb.	.115 lb.
Rosin	4.50 bbl.	6.25 bbl.
Rubber substitute, black	.07 lb.	.12 lb.
white	.10 lb.	.22 lb.
Shellac	.16 lb.	.24 lb.
Toluol	.40 gal.	4.25 gal.
Ultramarine blue	.07 lb.	.20 lb.
Waxes—yellow beeswax	.32 lb.	.35 lb.
white beeswax	.10 lb.	.55 lb.
Ozokerite, black	.16 lb.	.45 lb.
green	.18 lb.	.65 lb.
Montan	.07 lb.	.23 lb.
Ceresin, white	.12 lb.	.15 lb.
Paraffin, 128°	.035 lb.	.045 lb.
Yellow ochre	.0125 lb.	.02 lb.
Zinc oxide, American	.055 lb.	.08 lb.
French process, green seal	.07 lb.	.31 lb.
red seal	.065 lb.	.30 lb.
white seal	.075 lb.	.31 lb.

brass cases have been needed for the various calibers of rapid-fire field pieces. Fixed ammunition, the shell and powder charge being put up in cartridge form, is essential to the quick-firing gun, both afloat and ashore, and only brass answers for these capsules.

Zinc oxide, also, now appears to be susceptible of military application. A very large dealer in New York received a short while ago a long-distance telephone call from Canada. The Canadian would-be purchaser desired zinc oxide, and expressly said he did not want it for use in the manufacture of rubber goods. When pressed for an explanation, he admitted that it was needed for a lacquer for the inside of shells. Again, zinc oxide was sought for mixing with a special coating for barbed wire destined for the European battle front.

Where certain raw materials are concerned that we have formerly, either in part or exclusively, obtained from foreign sources, the supply will continue to be uncertain or denied us entirely. This is not explained wholly by the maintenance of blockades, for the fact is, British and German shipping have been the principal carriers of many of these alien products, and neutral sources of supply are closed to us now or hampered in their deliveries simply because merchant craft are not available for this service.

Taking up in detail the principal chemical and compounding ingredients used in the manufacture of rubber, there is generally a unanimity of opinion as to the market of 1916, but in some instances the experts disagree, and we are stating the facts as they have been given us. We can only hope that where these authorities are not in accord, the turn of the market will be favorable rather than otherwise to the rubber manufacturer. However, as we have said before, optimism should be held in check.

VIEWS OF THE SUPPLY MEN.

ACETONE AND ACETIC ACID, both wood distillates, will continue to advance. In the case of acetone, which is used largely as a solvent of guncotton in making smokeless powders, it was impossible to get any spot two months ago, and it will probably remain scarce. The same situation prevails in the matter of acetic acid, and the outlook for lower prices for the consumer is most unfavorable.

AMMONIUM CARBONATE. There is apparently no reason why this should be scarce. Ammonium is used variously in the manufacture of explosives, but many of our steel plants and some of our gas works are saving this by-product; so the war demand is being met accordingly without affecting the general market.

ANTIMONY, CRIMSON AND GOLDEN SULPHURETS. The situation is complicated in regard to these pigments. Shipments of metallic antimony from Europe have either been prohibited or stopped by blockade, and those from China and Japan have practically ceased because of the part that Japan is now taking in supplying Russia with munitions. It is said that certain consignments from China and Japan actually reached the Pacific coast and were then bought from the American consignees and dispatched at once to Vladivostok, reaching Russian ammunition makers via Siberia.

Imported stocks of both crimson and golden antimony are practically exhausted. Several domestic makers are producing acceptable qualities in an experimental way, but not in sufficient quantities to take care of the demand. Owing to difficulty in obtaining the raw material, prices of both crimson and golden antimony are high and will remain so until conditions governing the export of the crude material from China are radically improved.

BARIUM SULPHATE, precipitated, the base of which is binoxide of barium, is becoming scarcer each day. The European sources are practically cut off and almost prohibitory prices prevail.

BARYTES is likely to advance still further. Since the war began we have had to turn to Tennessee as well as Missouri for our requirements. Several domestic plants are now producing it and there is promise of ample supply. However, if the barium industry is to continue, it will need ample protection after the war. In connection with the matter of barium and barytes, blanc fixe should be mentioned now, being made from barium monoxide. Blanc fixe is at present worth $100 a ton, and will probably go higher.

BENZOL. While we have heard much of late about domestic producers, intended to encourage us, still as a matter of fact no manufacturer of benzol is yet ready to quote fixed prices or to promise lower costs in the near future. Indeed, one manufacturer has quoted $1.10 a gallon. The steel companies of the United States are now, by the husbanding of their by-products and the introduction of suitable apparatus, turning out 15,000,000 gallons a year, and this in contrast to the 3,000,000 gallons of benzol of the days before the war. But, unhappily, the part this plays in the making of modern explosives has resulted, nevertheless, in an inadequate supply. Prices are going up, and the ordinary user is seriously inconvenienced and likely to be more so. Only limited amounts can be now had on a year's contract, and that at 70 cents a gallon, while spot is quoted at 80 cents.

BETA NAPHTHOL is scarce because naphthalene, from which it is made, is hard to get. One of the biggest domestic producers has none for immediate delivery, but holds out hope for 1916. There are only two manufacturers here and the price may reach $3 a pound.

BLACK HYPO. This product is not to be had at all.

CARBON BISULPHIDE. The American producers will probably be able to meet the demands, and the price should remain substantially unchanged.

CARBON TETRACHLORIDE. While we have two or three domestic producers in this field, still they can not supply the demand now that imports from England especially have ceased. The price will probably go up.

CAUSTIC SODA (76 per cent.), is high-priced now and an advance is predicted. Prices may range anywhere from 6 to 10 cents a pound. It is said that the present price is not justified by the available supply, but that it probably reflects that "sympathetic" rise which so often follows the advance of other chemicals. The Germans are using caustic soda extensively in the air-regenerating equipment which they supply for the men in the trenches handling the gas-making apparatus, and in the breathing equipments furnished to aviators and the escape helmets for the crews of submarines. Contracts are being made at 4½ and 4¾ cents in car lots for 1916 delivery.

CHROME GREEN AND YELLOW will both be higher, owing to the scarcity of the basic materials from which they are made. Here we see the effect of the demands of the metallurgist and particularly of the steel mills engaged in the fabrication of war materials. Green oxide of chromium may go to 40 cents a pound.

GRAPHITE. The domestic crystalline graphite, commonly known to the trade as "flake," is more likely to increase than to diminish in price. Owing to the war, our usually big importations of graphite from Ceylon have been very much reduced, and because of hampered shipping we are not getting our accustomed supply from Corea. The output of the mines in Mexico, upon which we have drawn generously, has been curtailed by the disturbed conditions in that country.

IRON OXIDES. While the domestic resources are ample, the native products are not as good as those from abroad. The German supply is completely cut off and the English one is limited and higher in price because of increased cost of production.

LEAD OXIDES are all based on the state of the metal market, which is still advancing on account of the war. Here is where the destructive bullet hits reflexively the rubber manufacturers.

LITHARGE has advanced a quarter of a cent a pound lately, and there is a further upward tendency. The average level in 1916 will, unquestionably, be a high one.

LITHOPONE (30 per cent.) is becoming scarcer due to the advance of the zinc market. Very little is now imported, and none, of course, from Germany. Lithopone will probably advance from one to two cents a pound. The market is now firm at 7 cents on contracts for 1916, and plus charges, will bring it up to 7¼ cents a pound. For local distribution to small buyers the market price will range between 7½ and 8 cents a pound.

MAGNESIA CARBONATE. There are four or five American producers who formerly had to almost beg for orders, but now they cannot take care of the business offered them, as the foreign demand is so great. It is being used in the making of explosives, and is employed as an inert "carrier" for nitroglycerin and the like in the manufacture of dynamite and its destructive kindred.

CALCINED MAGNESIA, the cheaper German grade, is advancing, and prices will be much higher.

MAGNESITE has heretofore come mostly from Greece, but this source of supply is now shut off. Pacific coast magnesite is not available in sufficient quantities to meet the demand, and the cost of transportation is high. This material is used in the making of refractory linings for steel furnaces and in the fabrication of crucibles, etc. The state of the steel market, in meeting the requirements of war, explains the magnesite situation. Prices will range between $50 and $60 a ton.

OIL, ANILINE. Owing to the new manufacturers here, prices now may be made on contracts for next year ranging from 75 to 80 cents a pound. Producers naturally want to cover the cost of their lately established plants, and are purposely keeping up the prices to that end.

OIL, PINE. The prices for this oil have been high because the turpentine plants in the South were shut down at the outbreak of the war. There is practically none of this in the market now and prices are advancing, ranging from 65 to 80 cents a gallon.

ORANGE MINERAL. At this writing, the price is 12 cents a pound, and there is every reason to believe it will advance.

PITCH, Burgundy, supply rapidly diminishing.

PRUSSIAN BLUE is going higher on account of the increased cost of domestic manufacture. A large dealer has declared that it is unwise to predict the ultimate price.

ROSIN prices are high, but it is quite likely that there will be a decline immediately following the arrival of the December crop. However, it is probable that an advance will again be made. The comparatively low prices here are due to the difficulty of shipping abroad, and the domestic users benefit accordingly. Rosin is employed extensively in the manufacture of a variety of munitions.

RUBBER SUBSTITUTES have gradually increased in price owing to the advance in the cost of oils, particularly rapeseed. The rise in rubber substitutes has been quite 25 per cent. since the outbreak of the war, and the future is decidedly problematical.

SHELLAC is gradually advancing, and is uncertain, like all other allied crop products.

SULPHUR CHLORIDE has been the object of an extraordinary foreign demand, and such, too, has been the case with bisulphide of carbon. Heretofore business has been refused by domestic manufacturers in the interest of American consumers. If, however, this available foreign business is covered, then the domestic consumer will undoubtedly face an advance in price. How long the American producer can withstand foreign offers at persuasive prices is a question.

SULPHURIC ACID is one of the hardest things to get in the chemical market today, and it figures importantly in a wide variety of industries. Prices are way up, and as much as $200 a ton has already been demanded for spot. This situation intimately concerns rubber reclamation.

TOLUOL, pure. The market now ranges between $4.50 and $5 a gallon, and none can be had on contract until 1917. Some spot is available in varying quantities, due to excess of production over that estimated by the manufacturers. As long as the war continues the scarcity will probably prevail.

VERMILION, brilliant, will grow scarcer the longer the war continues, as German base colors are necessary to its production. The supply is now almost exhausted. American vermilion is equally affected by the conflict in Europe through the advance of the mercury market, mercury being extensively employed in making the widely used detonator—fulminate of mercury.

WAXES present an interesting situation. More yellow beeswax is used than white beeswax. The price now ranges from 25 to 40 cents a pound. For this natural yellow beeswax the wide world is being drawn upon—Asia, Africa, Australia, and practically all of the islands of the seas, and our importations are exceptionally large. The stocks have been well absorbed, so that prices have been maintained. We have taken care of European consumption in doing this. Ozokerite and montan, which are produced in Austria and Germany, are no longer coming to us and the supply is substantially exhausted. On a normal market selling at from 18 to 20 cents a pound we now have to pay as high as 65 cents for ozokerite. Montan selling ordinarily at from 5¾ to 6¼ cents a pound has sold recently at 25 cents. Ceresin is ozokerite wax refined and lowered in price by the admixture of paraffin. The price of ceresin will naturally depend upon the supply of ozokerite, and we can get no more of this until the war ends. Most manufacturers of paraffin are sold up three to six months ahead.

WHITING will probably remain about the same but with an upward tendency due to the higher cost of cliff stone—the advance there being the result of increased labor costs, coal, and the lack of barrels. The future price can not be safely predicted.

YELLOW OCHRE is to be had here from domestic deposits, but the product is of low strength. The best comes from France and the price is going up on account of the lack of labor and other economic consequences of the war. It is not unlikely that there may be an advance of a cent a pound.

ZINC OXIDES. As is well known, there has been a highly speculative market in these, and certain gradings, such as "XX Horsehead," have sold as high as 15 cents a pound. Of French process, green seal, there is practically no supply here. In fact, inquiries are now coming from abroad for all grades. Zinc sulphide, 30 per cent., is so scarce that one big dealer has said he does not know where any can be obtained. Certainly the outlook for the makers of white goods is a most unpromising one for 1916.

There are, however, a number of chemicals and ingredients that have not been affected by the war and are normal in price and quantity. For instance, talc, soapstone, aluminum flake, mica, asbestine and sulphur flowers are produced in this country and are cheap and plentiful. Asphaltum, lampblack, infusorial earth, tripolite earth, rotten stone are about normal in price and the supplies are apparently abundant for all purposes.

The complete and well-arranged catalog of the Scientific Materials Co., Pittsburgh, Pennsylvania, devoted to chemical laboratory equipment, has been received. It is fully illustrated and well indexed, and will be appreciated among chemists.

The Arthur H. Thomas Co., Philadelphia, Pennsylvania, publish a large cloth-bound catalog of 579 pages supplemented with a 70-page list of reagents. The book is devoted to apparatus selected for laboratories of chemistry and biology in their application to education, industry, medicine and public health. As a reference book it will be appreciated in any laboratory.

What the Rubber Chemists Are Doing.

VULCANIZATION EXPERIMENTS ON PARA RUBBER.

IN the October issue of THE INDIA RUBBER WORLD there was given an abstract of a lecture by B. J. Eaton on "Variation in Rate of Vulcanization of Rubber." Since that date the authors' report of the original investigation has been published in the "Journal of the Society of Chemical Industry" (Vol. 34, pp. 989-999). The authors, B. J. Eaton and J. Grantham, chemists of the agricultural department of the Federated Malay States, have there recounted their investigations, with many tables and curves showing the relations between time of cure and vulcanization for various samples of rubber. Supplementary to the abstract of the lecture, mentioned above, the following summary of their results will be of interest.

1. Considerable variation exists in plantation Para rubbers from the same as well as from different estates.

2. This variation relates chiefly to its rate of vulcanization, and not to its general mechanical properties, especially in the case of properly prepared "first latex" samples.

3. Given the rate of cure under specific conditions, vulcanized rubber having similar mechanical properties can be made from all good samples of "first latex" rubbers.

4. Differences in mechanical properties are greater between high and low-grade plantation rubbers than among first quality rubbers. Some rubbers never attain the maximum mechanical properties reached by others, whatever the period of cure adopted. These differences in the case of "first latex" rubbers are not so important to the manufacturer as the differences in rate of cure, and are not of the same order.

5. The rate of cure is due to some non-caoutchouc substance in the latex, possibly protein or other organic constituent, or to some product derived from these substances, which acts as a catalyst and accelerates the rate of cure.

6. This substance may be already present in the latex, or it may be subsequently formed there by decomposition and taken up by the rubber in variable quantity, according to the mode of preparation, or, alternatively, it may be formed in the coagulum in variable quantity, depending on the amount of serum remaining or the presence of preservatives which hinder or prevent its formation. These theories await investigation.

7. Smoking, removal of excessive serum in the washing process, and preservatives are among the artificial factors which either hinder the formation of this substance or, if it exists in the prepared rubber, partially destroy it.

8. The catalytic substance is probably not affected greatly by heat. Whether heat destroys it, or prevents its formation in the latex or partly coagulated rubber, awaits investigation.

9. The rate of cure of a rubber under specific conditions is not indicated in any way by the mechanical or any other apparent properties of the raw material.

10. Two alternatives are suggested to secure uniformity between rubbers from the same or different estates: (1) The issue of certificates giving correct rate of cure and mechanical properties at this cure; (2) the attainment of more uniformity by uniting the rubber from latex collected during a series of days into one ball or block, which may be described as the method of averages.

Over three years ago (July, 1912), Messrs. Beadle and Stevens clearly showed, for the first time, that the removal of the nitrogenous matter from Pará rubber resulted in slow-curing rubber, as indicated by low percentage of sulphur in "combination" with the rubber and poor physical qualities; while the excess of protein matter has the reverse effect. They particularly drew attention to the influence of the protein on the speed of vulcanization. They also pointed out the importance of their discovery as regards the vulcanization of synthetic rubber. In subsequent papers Beadle and Stevens have shown that not only the nitrogenous matter, but also the resinous matter, affects the quality and speed of vulcanization of the rubber. [See reference in THE INDIA RUBBER WORLD, May, 1914.]

CONDENSATION PRODUCTS.

A very interesting paper on the condensation products of phenol and formaldehyde, with special reference to bakelite, by Goro Matsumato, appears in the "Journal of Chemical Industry," Japan, Vol. 18, page 434 (1915). Mr. Matsumato classifies these various products in three groups, namely, crystallizable, soluble and fusible, insoluble and infusible. His results on bakelite are thus summarized:

(1) The whole process may be divided into three stages: the initial condensation, the concentration of the products, and the hardening. Reactions in all stages are accelerated by certain reagents.

(2) The following may be used as condensing agents: sulphuric acid, hydrochloric acid, ammonium hydrate, sodium sulphite, sodium carbonate and sodium hydrate.

(3) As a hardening agent only basic substances, as sodium hydrate or ammonium hydrate can be used, of which the latter is better.

(4) The combination of sodium hydrate as the condensing agent and ammonium hydrate as the hardener gives the best results both in yield and quality.

(5) With the use of cresol instead of phenol a similar substance is obtained.

TEST FOR BENZOL OR ALCOHOL IN HYDROCARBON MIXTURES.

The well-known German chemist, Dr. Fritz Frank, in a recent article mentions a method for the colorimetric estimation of benzol or alcohol in mixture with hydrocarbons of the paraffin series. The test is credited to Karl Dietrich, who obtained from dragon's blood resin a coloring material which gives a crimson color in the presence of benzol or alcohol. The test is made by means of "Diacorubin paper," which is impregnated with varying proportions of diacorubin resin in order to afford quantitative color reactions in a standard test volume of liquid.

RUBBER RESINS.

In a voluminous article, published serially in "Gummi Zeitung," Dr. F. Jacobsohn reviews the work of many authorities concerning the presence of resin in rubber latex and in various commercial grades of rubber. There seems to be much doubt as to the function of these resins in the plant economy, and not much agreement as to their effect in rubber other than that they seem to act as catalyzers during vulcanization, and consequently are not advantageously removed except in the extreme case of Pontianac, where the resin content is the chief ingredient.

RESEARCHES ON AFRICAN RUBBERS.

F. Heim and others in the "Bulletin of Agricultural Intelligence," Vol. 6, 581 pages (1915), report investigation of the "Gohine" liane (*Landolphia heudelotii*), a source of rubber in French West Africa. The writers have analyzed two samples of this rubber from the Upper Senegal-Niger region and give data concerning strength, extension, nerve, elasticity and permanent stretch of these samples and also other samples from the same variety grown in different stations and prepared by various methods of coagulation. Compared with fine hard Para the rubber had equal strength and greater resiliency and stretch. Three samples of rubber from French Equatorial Africa, known as "Owouina Noir" or "Andang," "Kondo" or "Pembe," and

"N'Cauli," were analyzed by the authors, without knowledge of their botanical origin. But the data shows that "Owouina" rubber is interesting because of its great chemical purity, comparable to that of Para. "Kondo" rubber also appears to possess a fair technological value.

CHEMICAL TREATMENT OF RUBBER.

UNITED STATES OF AMERICA.

A MOLDABLE PHENOLIC CONDENSATION PRODUCT. 1,146,299 and 1,146,300. J. W. Aylsworth.

VULCANIZATION ACCELERATOR.—1,157,177, S. J. Peachey. The invention relates to the use of Paranitrose-dimethylaniline or its homologues to accelerate vulcanization of rubber, as mentioned in THE INDIA RUBBER WORLD, August, 1915.

RUBBER SUBSTITUTE.—1,159,257 and 1,159,258. Georges Nüth. These patents relate to the preparation of elastic rubber-like substances derived by the action of amines on ordinary sulphuretted fatty oil "substitutes" or "factices" and the subsequent vulcanization of the polymerized substances to various degrees of elasticity or hardness. These new bodies have high electrical insulating property. When dissolved in appropriate solvents they serve as adherent, flexible, transparent and brilliant varnishes. A long list of ammonia derivatives of the fatty and aromatic series is named as suitable for the formation of the new elastic bodies.

PROCESS OF VULCANIZING RUBBER.—1,159,327. Paul I. Murrill. This process relates to an improvement in the cold cure process of vulcanization by which the purity of sulphur monochloride is preserved against the deteriorating influence of atmospheric moisture. The improved process does not entirely prevent the decomposition of the sulphur monochloride but offsets it by other reactions whereby inert substances result. This is accomplished by adding to the sulphur monochloride, diluted with the usual inert liquid to adapt it for use, a quantity of metallic sodium. After standing about twenty hours the liquid may be used as a vulcanizing agent and the sodium will combine with the impurities.

UNITED KINGDOM.

VULCANIZING RUBBER.—12,661 (1914). Abridgment of October, 1915. F. Bayer & Co. The subject matter of this patent was referred to in a note on vulcanization accelerators in THE INDIA RUBBER WORLD, June, 1915. It relates to the vulcanization of natural or artificial rubber-like substances in the presence of such ammonia derivatives of a basic reaction, other than those that liberate free ammonia under the conditions of vulcanization, or such nitrogenous organic bases, other than piperidin or its homologues or derivatives of these bases, that possess a dissociation constant in aqueous solution greater than 1×10^{9}. Examples of such bases are sodium amide, benzylamine, naphthy-lenediamine, quaternary ammonium bases, the addition product of ammonia and acetaldehyde and paraphenylenediamine.

PHENOL-ALDEHYDE CONDENSATION PRODUCTS.—28,187 (1913). Abridgment of October, 1915. A. Heinemann. In the production of resinous condensation products from phenol or cresols and formaldehyde or its polymers, the reacting substances are first heated without a condensing agent, yielding a liquid oxybenzyl-alcohol, and this product is further heated in an open vessel with sulphur dioxide solution. The product can be rendered insoluble by further heating or treatment with a basic catylist.

EBONITE SUBSTITUTE.—76 (1914). Abridgement of October, 1915. A rubber substitute is made by mixing minced animal tissue, such as sinews, after heating with an astringent solution such as zinc chloride or hydrochloric acid, with starchy matter, such as powdered tapioca. The dough thus formed, after drying, is preferably mixed with a small proportion of rubber latex or a solution of rubber or resin, for example 6 to 12 per cent. of rubber dissolved in turpentine. The product is heated until tough and applied as a dressing to leather, canvas or other fibrous base.

RUBBER AND LEATHER COMPOSITIONS.—13,128 (1914). E. B. Cook. Leather reduced to a fibrous state is mixed with vulcanizable rubber compound on rubber mixing rolls and the product vulcanized by heat, for use as shoe soles, pneumatic tires, door mats and other tread surfaces. In an example 2½ parts leather fiber are added to 1¾ parts crude rubber, 2 parts reclaimed rubber, 1⅞ parts fossil flour, 1½ parts litharge, ¼ part sulphur and lampblack or other pigment.

SYNTHETIC RUBBER, 297 (1915).—Dr. Hermann Stern, Karlstrasse 42, Munich, Germany. This invention relates to the production of hydrocarbons of the diolefin group, more particularly isoprene, caoutchouc and caoutchouc-like substances. The essential characteristic of the process consists in, or includes, the treatment of an aliphatic ketone or ketones with fuming sulphuric acid. The process in its simplest form consists in heating acetone or its homologues with fuming sulphuric acid. For example, if 500 grams of acetone are heated with about 350 grams of fuming sulphuric acid containing 18 to 20 per cent. of sulphuric anhydride, there results, after distilling off the volatile liquid products, and neutralizing the solid residue with an alkali, approximately 350 grams of solid caoutchouc-like substances. Similar substances are obtained if there is substituted for acetone, or used in conjunction with it, homologues, such as diethyl ketone, methylethyl ketone or propyl-brutyl-ketone.

THE FRENCH REPUBLIC.

RUBBER SUBSTITUTE AND PROCESS FOR MANUFACTURING. 476,396 (October 21, 1914.)—V. Ottorepetz. (Same as British patent No. 21,524, 1914). See THE INDIA RUBBER WORLD, October, 1915.

RUBBER SUBSTITUTE. 476,509 (April 24, 1914).—J. de la Fresnaye and L. Aimond.

RUBBER SUBSTITUTE, PLASTIC, SEMI-PLASTIC OR HARD MATERIAL obtained by using human or animal hair, scraps of tortoise shell, leather, or horn, and process for manufacturing it. 476,578 (April 28, 1914).—G. L. Lussaud and R. Montois.

CONDENSATION PRODUCT. French patent 468,879. A. Labbé.—Resorcinol, hydroquinone, pyrogallol, pyrocatechol and their derivatives are dissolved in formaldehyde in presence of very small amounts of dilute mineral acids which appear to act as catalyzers. The mass solidifies after several hours to an elastic product, the hardness of which increases with the dilution of the formaldehyde, and which can be rendered transparent by addition of acetone or glycerol to the formaldehyde. The product is permanent, fireproof and easily worked.

THE GERMAN EMPIRE.

PROCESS FOR HARDENING PLASTIC MASSES OF GLUE, GLYCERIN AND powdered fillers. 288,321 (June 23, 1914).—J. Traube, Am. Lützow, 130, Charlottenburg.

RUBBER SUBSTITUTE. PROCESS FOR PRODUCING SOLID PLASTIC masses. 288,347 (May 20, 1914).—Supplement to patent 274,176, Karl Hagendorf, Baufeld-bei-Fredersdorf Ostbahn and Dr. Adolf Breslauer, Hektorstrasse, 13, Berlin-Halensee.

RUBBER SUBSTITUTE. PROCESS FOR MANUFACTURING A SUBSTANCE specially suited for being worked into tires. 288,476 (July 22, 1913).—Murizio Barricelli, Nordstrand, near Christiania, Norway. Represented by R. Schmehlik and C. Sattow, Berlin, S.W. 61.

RUBBER SUBSTITUTE. PROCESS AND APPARATUS FOR MAKING plastic masses out of fibers and cements subjected to the action of sulphur, sulphur chloride and nitric acid on oil, tar and the like. 288,532 (Nov. 29, 1914).—Nicolaus Reif, Christuskirche 24, Hanover.

NEW MANUFACTURING PROCESSES.

UNITED STATES OF AMERICA.

INSULATED WIRE AND TERMINAL.—1,157,916, Arthur M. Wentworth, Pittsfield, Massachusetts, to General Electric Co., Schenectady, New York.

METHOD OF MAKING RUBBER FLOAT-BALL VALVES.—1,158,009 and 1,158,395. David Stephen, assignor to the H. O. Canfield Co. The upper half of the float-ball is stiffened by an internal disc of hard rubber, upon which the outer ply of soft rubber is cemented, carrying the metal insert for attachment.

PRINTING BLANKET.—1,158,033. Frank E. Ellis. A rubber surface blanket with textile plies and an insertion of a ply of sheet cork composition to secure softness and pliability.

BEAD FOR PNEUMATIC TIRES.—1,158,194, M. W. Fink and A. M. Kobiolke. A molded tire bead of rubber reinforced with internal longitudinal triangular strip of leather and with a leather cover for the body.

PNEUMATIC TIRE.—1,158,227. H. O. Johnson. The special feature is an endless chain of looped, metallic links, specially formed from steel tape. This chain is placed as a protecting band between the tire casing and the inner tube to prevent puncture of the latter.

ART OF MANUFACTURING FOOTWEAR.—1,158,389. W. E. Piper, assignor to Boston Rubber Shoe Co. An apparatus for cold pressing or molding, between flexible diaphragms, uncured rubber footwear on lasts, thus compacting the adhesive plies by expelling the contained air preliminary to vulcanization.

PRESSURE APPLYING APPARATUS FOR FOOTWEAR.—1,158,390. Chester J. Randall, assignor to Boston Rubber Shoe Co. The goods on lasts are supported in an adjustable bell-shaped tank containing air under pressure.

HOSE.—1,158,595. John J. Voorhees, Jr. A hose formed of a strip of spirally wound flat metal, with a superimposed ply of fabric and a cord spirally wound upon the outer surface to form inwardly projecting ribs between the spirals of the metal strip and a tube of rubber applied in close contact with the outer surface of the fabric. The ribs prevent movement of the spirals and contact between the metal and rubber, besides protecting it.

VACUUM TREATMENT OF COMPOSITIONS OF RUBBER.—1,158,843. Raymond B. Price, assignor to Rubber Regenerating Co. The process begins by incorporating a vulcanizing agent with vulcanizable plastics previous to their vulcanization. Then subjecting the mass during or subsequent to this addition, simultaneously to a kneading action and to the action of a vacuum, and finally subjecting the surface of the mass to a sealing pressure when enclosed in a yielding covering.

HOSE.—1,158,995. Richard J. Evans. A hose with tube and cover of rubber and bias-cut plies of asbestos fabric applied spirally.

EXTRACTION OF RUBBER.—1,159,137. Dominique Vecchini. The object is to successively reduce to an extreme degree of fineness shrubs and bark of rubber-bearing plants, in a specially designed machine, thus frictionally heating the rubber to an agglomerating temperature, without injury to its fibrous nature.

COATED FABRIC.—1,159,155. William G. Ayres, assignor to William Ayres & Son. A body or core of coarse burlap with a thick fibrous mass on one side and a thin fibrous mass on the other, these fibrous masses being connected to each other through the meshes of the burlap. A preliminary coating of rubber is applied to one face of the material to lay the fibers perfectly smooth, and a finish coating is then applied to the previously coated surface.

RESILIENT WHEEL.—1,159,218. Arthur Frederick Hawksley. Molded forms, with or without outer rubber covering, are built up with rubber impregnated cord and shaped to surround and protect resilient air tubes located around the inside circumference of a wheel.

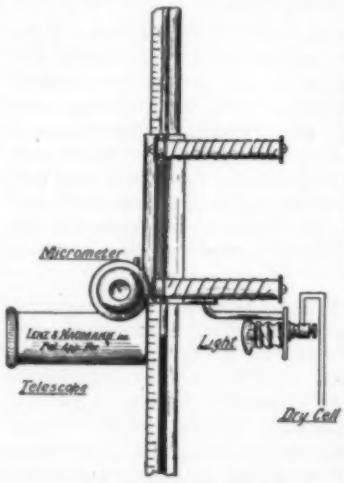
UNITED KINGDOM.

A NEW FABRIC IMPREGNATING PROCESS.—The fabric is submerged in the rubber solution and passed between rollers, which cause it to vibrate. This opens the threads so that uniform impregnation is obtained. [G. W. Beldam and A. U. B. Ryall, British patent No. 17,097—1914.]

LABORATORY APPARATUS.

IMPROVED MICROMETER READING DEVICE.

LABORATORY workers will appreciate the ease and accuracy with which the graduations of thermometers and burettes can be read by the Lenzmann micrometer reading device. This unique little instrument was publicly shown for the first time at the recent National Exposition of Chemical Industries in New York City. It was devised to meet a genuine need, and was first approved for use in the laboratories of the United States Bureau of Standards. The original form has been improved by the addition of a small electric lamp located so as to illuminate the scale and to render it more easily read. The "Lenzmann" differs from other reading devices intended for the same purpose. It consists of a combination of lenses, but, in addition, is provided with an adjustable lens with a very fine hair line through its center and connected to a graduated micrometer screw in such a way that it may be moved across a certain space in either direction. This makes it possible to subdivide the space between any two graduation marks of a thermometer or burette into from two to twenty parts. The illustration shows a side view of the instrument clamped to a thermometer. The subdivision of the scale being observed is read from graduations on the face of a cylinder forming part of the milled thumb nut. [Lenz & Naumann, New York.]



ELECTRICALLY HEATED EXTRACTION APPARATUS.

A compact apparatus, suitable for general laboratory extractions in analytic work is shown in the illustration. It is of revolving type, mounted on an electrically heated base. It will accommodate any style of glass extractors, and any need for adusting the corks on the tubes, in order to remove any part of the glassware, is obviated. The condensing tube slides easily through the cooling tank, thus enabling any flask or extractor, or both, to be removed from the cork and not the cork from the glass parts, as in other forms of support. There are no valves or washers used and it is impossible for the cooling tank to leak where the tube passes through. The water enters at the bottom, through the center column and down to the bottom of the condenser, the warmer water rising and overflowing through the central column to an outlet in the base opposite the inlet. This arrangement dispenses with the many rubber-jointed individual condensers, and their clamps, heretofore used. [E. H. Sargent & Co., Chicago, Illinois.]

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information for rubber manufacturers, is now ready for mailing. Price, $6.

Modern Industrial Methods in the Rubber Industry.

W. Armour Johnston, Jr.

NOT long ago a friend addressed the writer as follows: "Why doesn't the rubber industry in general put a more reliable product on the market? Usually I am obliged to stretch several rubber bands before I can get one that won't break, two out of every five auto shoes I buy have to be returned for credit, because they become unusable before the completion of their guaranteed mileage," and so on with water bags, syringe bulbs, shoes, and other rubber articles he had occasion to use. It was not any one make that he complained of, for he had tried many of the best, and although some proved to be more reliable than others, successive purchases of the best sooner or later proved their unreliability. A certain firm manufacturing apparatus for hospital use recently installed an expensive equipment, including several hundred feet of standard rubber tubing which they bought for the purpose directly from a well-known rubber factory. Within a very short time the tubing had become unusable. The rubber factory replaced the entire lot, but the results were just the same, and in both cases the cause of the trouble was laid to improper curing. Such experiences are only too common and have led to general condemnation of the rubber industry for its unreliable product and its backwardness compared with other industries.

The manufacturers meet these criticisms by claiming that the art of rubber manufacture is still comparatively young; that the nature of the product itself offers peculiar difficulties not found elsewhere because of the variability in the raw state and the changes which are likely to occur in the finished article after it is made; that they are spending large sums of money investigating and trying to eliminate these troubles; and, finally, that the many stores in which the product is sold and over which they exercise no control carry rubber stocks unreasonably long before selling.

To many of those who are acquainted with the manufacture of rubber articles, these claims are readily understood and appreciated; but they do not satisfy the present needs of the consumer, and it is a belief held by the writer, as well as by others, that the average rubber shop overlooks two very important weaknesses, namely:—

1. An absence of a high standard of mechanical practice and precision,
2. The use of empirical instead of scientific methods in the control of processes, and the handling of materials.

Comparisons of representative shop practice may make the first of these points clearer. Contrast, if you will, the usual methods employed in a machine shop with those found in a rubber factory even of the better type. In the former a workman is assigned a task on a machine—a milling machine, for instance—which makes one or more cuts under graduated control from any desired angle. The material upon which he operates and of which his cutting tool is made—tool or machine steel, hard or soft brass, or whatever it may be—is of practically uniform quality, not only from different sources of supply, but also in different purchases over considerable intervals of time. A clear understanding of what is expected of the workman is shown on a detail working drawing made in advance from a complete design, so that the result harmonizes with other work on the same or other pieces and is a part of a schedule of operations whose previous consideration, as a whole, assures the elimination of misfits and a standard quality which can be repeated as often as desired. Any experienced machinist who can operate the machine and read the drawing, can produce the same result. No change in the design is allowed without a reconsideration of the whole by the designer. The judgment of the lower-priced machinist can have no effect upon the quality of the product so long as he adheres to the instructions on the drawing and the design and drawing are correct.

In the rubber shop, however, a workman does his work on a machine—a mixing mill, for instance—where the adjustments of heat application and roll spacing are not under graduated control. He puts on the mill the rubber and ingredients, which are usually weighed out for each batch in advance, adjusts the roll-spacing or gage, applies steam or cold water to the rolls, and handles the mixture in accordance with his sight, touch, and previous experience. He is given few, if any, written instructions to follow. Nor does the material which he works on act uniformly, even in different batches of the same kind of mixture. This may be because of quality variations in the crude rubber or other raw materials, or it may be caused by differences in previous treatment due to faulty workmanship or the different personal equation of a substitute workman. At any rate the mill-man takes the materials as furnished him and endeavors to work them into a condition which his experience tells him is about right. Other operations throughout the whole process, except possibly curing and vulcanizing, are carried on similarly; so that there is at best only an incomplete harmonizing of all operations as they affect the whole finished article. In some plants chemical and physical examinations are made to check the results of important operations; but although they indicate and save many defects, such tests are often difficult and of questionable reliability. In short, the maintenance of the manufacture of a rubber product of uniform quality, according to present practice, is very largely dependent upon the judgment and personal equation of the more or less experienced workman, rather than upon a high standard of mechanical practice and precision. The result is a product of variable quality, as might be expected.

It might be well to state here that the writer realizes that among rubber, as well as among other factories, there may be exceptions where a higher state of development obtains; but, unlike the others, the number of exceptions among rubber shops is comparatively small, as evidenced by the condition of the product on the market.

Thus far an endeavor has been made to indicate the absence of a high standard of mechanical practice and precision in the average rubber shop by comparing the present existing conditions with those of a modern representative of high development—the machine shop. Hereafter an attempt will be made to describe briefly a few of the better methods of handling materials and of controlling processes.

In any effort to standardize the rubber shop the first necessity is to eliminate as far as possible the effects of unavoidable variations in the crude rubber as it is now frequently marketed in small quantities by many different growers or estates. One of the best methods is to include always in each batch or millful a small quantity of the product of each of several of the same reliable growers in the same quantity ratio to each other. The more growers included the less will be the percentage content of each, and the less possible variation from standard quality by occasional failure to obtain the product of one or two of the usual growers. This may involve increased purchasing and weighing costs, but the resulting smoother manufacturing conditions, fewer defects, and more uniform quality of product will more than justify the extra expense. With the wild South American rubbers the same treatment can be applied to different brands or marks when the usual available quantity

of any one of them is insufficient. And just as plantation or estate rubber must be delivered in original containers, so shippers, brokers, and weighers must not put different brands and marks of wild rubber in the same shipping case. The attainment of these requirements is difficult now, but only because they are not generally insisted upon.

Other important ingredients of rubber mixtures should be similarly treated. Ordering by specification should be carried out as far as possible, and on all materials tests for approval should be made before acceptance for use. Then each accepted purchase should be assigned a lot number and where the tests on several different containers of the same purchase indicate important differences in quality, which the manufacturers cannot avoid, each quality should be treated as a separate lot with a letter suffix added to the original purchase lot number. It has been found most convenient to have an independent series of lot numbers, beginning with 1, for each kind and grade of material. Thus an accepted purchase of, say, sulphur would become lot 1, and differences in quality, if found in that purchase, would indicate lots 1A, 1B, 1C, etc. The next accepted purchase would become lot 2, etc. Cost and stock accounts may be kept on each lot or group of lots, as may be found most practical.

Not only purchasing and stock-keeping, but also manufacturing by individual lots, should be strictly adhered to. For products of repeated manufacture this involves the following:

ARTICLE CLASSIFICATION.

All rubber work may be divided into the preparation and manufacture of the following general classes of articles, each of which should be assigned successive lot numbers.

RAW MATERIALS:

Dried Highland plantation *Hevea* rubber, lots 1, 2, 3, etc.
Dried wild *Hevea* rubber, lots 1, 2, 3, etc.
Zinc Oxide, grade 1, lots 1, 2, 3, etc.
Zinc Oxide, grade 2, lots 1, 2, 3, etc.
Etc.

MIXTURE:

Mixture 4 (*i. e.*, formula No.) lots 1, 2, 3, etc.
Mixture 22, lots 1, 2, 3, etc.
Etc.
(A lot may contain any number of batches or millfuls.)

CALENDERED SHEET:

Calendered Mixture 4—18 (*i. e.*, gage No.) lots 1, 2, 3, etc.
Calendered Mixture 4—15, lots 1, 2, 3, etc.
Calendered Mixture 30—18, lots 1, 2, 3, etc.
Etc.

FINISHED PRODUCTS:

Lots 1, 2, 3, etc., for each kind, size and shape.

PACKED PRODUCTS:

Lots 1, 2, 3, etc. for each different style and size of package of the same and different finished products.

The same raw material may be used in two or more mixtures, the same mixture may be calendered into two or more gages or thicknesses of sheet, and so on right through the complete classified list of articles, so that each article must be a separate manufacturing unit. The reasons for this will be more apparent later on.

LIST OF STANDARD OPERATIONS.

Each article should have its own complete list of operations or divisions of work, which are made in accordance with location, machinery, cost and other considerations, and there should be no deviation from this list in the manufacture of successive lots. Thus, in the preparation of a raw material we may have

a. Ordering
b. Testing
c. Preparing (*i. e.*, sifting, etc.).

The article is then considered complete, and put into stock for such use in one or more mixtures, as may be required. Its cost, ready for use, may be easily obtained.

Or, in making a mixture we usually go through the operations

a. Weighing rubber and ingredients
b. Mixing
c. Refining
d. Testing.

The article is then considered complete and ready for use in one or more calendered mixture articles. Or, finally, in making a finished product we may

a. Make up
b. Cure
c. Finish (*i. e.*, trim).
d. Test.

An operation can be added to any list to cover the same kind of work that has to be done on almost every lot, or regularly upon only a few pieces or pounds of the same lot.

In contrast with the above, the list of operations in the usual rubber shop, when there are any at all, runs through the entire schedule of work for the complete process, from the sifting of only as much of the raw material as is immediately needed, to the final packing of the finished product. But it is generally conceded to be good economy to bulk as far as practicable all the same kind of work on the same article, which, in other words, means to sift at one time all the same lot of raw material, to mix at one time all the requirements of the same kind of mixture for a convenient period, etc. For this reason and also because of shop ordering, cost, stock, and other considerations, this detailed classification of articles and the lists of standard operations are very important; in fact, no complete plan of shop standardization can do without them.

UNIFORMITY CONSIDERATIONS.

It is customary in mixing a lot of mixture containing a number of batches to use up one lot of rubber or ingredients as far as it will go, and then to finish the remaining batches with one or more other lots. This may even happen with several different raw materials in the same mixture. Such a procedure ignores the possibilities that slightly varying qualities of the successive lots of raw materials may cause more or less important differences in the finished mixture. In other words, every batch of the mixture may not be of uniform quality. Of course, the standardization and testing of raw materials will diminish the chances of trouble, but the manufacture of few, if any, of the raw materials, especially colored pigments and rubber, has not as yet reached such a state of quality uniformity in successive purchases that this way of putting them together will produce the most uniform results possible.

There is a better method, and it requires only a small amount of additional advance laying out on paper. When two or more different lots of the same raw material have to be put into the same lot of mixture, they should be so apportioned that each batch throughout the entire lot of mixture will contain exactly the same proportion of each lot of raw material. Similarly, every pound of calendered sheet should be made identical with every other pound in the same lot by the previous blending of any different mixtures or different lots of the same mixture which are to be sheeted out. And in curing, any two or more lots of mixture or calendered sheet of which the pieces are to be made, should be so blended that every cured piece in the same lot should contain exactly the same proportions of the same kinds and lots of calendered sheet or mixture, and hence of raw materials.

This system of lot manufacture, involving thorough article and operation classification, is not so complicated as it might appear. Its successful installation does, however, require patience, practice, and experience, and until those who handle it acquire proficiency they are likely to want to revert to the old method, because it seems easier and because the new way appears to require extra effort for small and perhaps unapparent differences. But eventually, if they honestly maintain its integrity,

they will find that the most systematic method is really the easiest in the long run, and that not only its faithful maintenance permits the tracing of a complaint to an individual purchase of raw material, but—what is even more important and perhaps otherwise unattainable—its systematic procedure creates a more favorable shop condition in which there is greater economy, fewer irregularities and delays, and greater assurance of a more uniform final product.

Another important item in shop management that adds to the scientific or systematic handling of materials has to do with a method of determining the time of issuing and the quantities of shop and raw material orders. It has been called "periodic ordering," but it might more truly be named stock budgeting, for it requires the predetermination of possible manufacturing requirements over a convenient interval of time, and the bulking of the necessary shop and raw material orders therefrom. A three months' period has been found most satisfactory in one plant, but other shops may find a longer or shorter period of greater advantage. The essentials of its successful operation are to divide the year commensurately into periods, to use good judgment in the estimation of advance requirements from past records and future indications, and to carry the schedule through unaltered after the orders have once been issued. If a change is believed necessary after it is too late to make an alteration, a supplementary order can be put through as a special, or the deficiency—or excess—can be remedied in the planning of the requirements for the next period. Advance period estimates should be made to allow sufficient time for the washing and drying of crude rubber, the resting of mixtures, etc. The development of several periods has to be experienced before this method is completely installed, and in some shops it may require even longer to make adequate adjustments of stock, space, and equipment; but the method is very flexible in its application to wide variations in shop conditions, and its advantages, aside from those of financial budgeting, are steadier labor and shop conditions with the elimination of rushed and inactive intervals, because an advance knowledge of work to be done within a period makes possible a more economical assignment, the elimination of excessive stock, space, and equipment requirement with the resulting minimum investment of capital, and the steady and frequent production of a semi-perishable product with an advance knowledge of the expected dates of completion.

Lack of space in a general article like this prevents the explanation of other large betterments for the control and handling of raw materials, such as strict stock-room control and the routing of operations, and complete cost and overhead expense accounting systems with comprehensive monthly and yearly summaries. Suffice it to say here, however, that all these systems and methods have been worked out from a conception of Taylor's Scientific Management, partially applied to the rubber industry, and their superiority over present methods, or lack of methods, in the average rubber shop is in every way more economical and desirable.

When the handling of materials has been thus standardized and the materials themselves made as uniform as possible, then, and not until then, the control of processes can be improved. Rubber mills, calenders, and tubing machines can be successfully equipped with comparative temperature measuring instruments and roll-spacing gages so that the variables of heat and handling can be controlled and standardized for each kind of mixture with reasonable accuracy. Press curing in molds with both steam and temperature indicators has usually attained a higher standard of accuracy than other operations, but there is still much more room for improvement in the use of better presses and molds, and more adequate tools for ejecting and cleaning.

Open steam vulcanizing is usually controlled by clocks, steam gages, and pyrometers or thermometers. The steam experts say that pressure varies directly with temperature, and that with gages and temperature indicators of equal accuracy and sensitiveness either instrument will indicate the true heat conditions within the vulcanizer. And yet the rubber worker knows that under the most uniform conditions and with the same temperature indication on either the gage or thermometer, he is obliged, for a good cure, to alter the time of cure to suit the use of "live" or "dead" steam; the former condition produced by a slightly opened exhaust valve to permit the continual escape of a small amount of steam and water, and the latter by an exhaust which passes through a steam trap. The rubber worker also knows that the curing directions in an autoclave where heat is externally applied to a sealed pot containing water are very different from those required for the same material in the same mold in the usual tank vulcanizer which is heated by the injection of steam through a valve with the ejection of water of condensation through a steam trap or slightly opened exhaust valve. The writer has yet to hear of a satisfactory scientific explanation of these phenomena and until it is forthcoming, the open steam vulcanization of soft rubber goods will continue to produce the present uncertain results, in spite of the strict observance of uniform conditions with which rubber manufacturers now endeavor to surround this important operation.

With materials and machines standardized, specific instructions can be worked out and put into concise form, so that the workman can follow them just as a machinist follows his blueprint or drawing.

It has been the writer's experience to develop and apply most of these suggestions for the betterment of rubber shop and product conditions, and the results obtained have more than compensated for the effort involved. One representative experience may serve to illustrate: In a calendering operation a gang of eight workers were turning out an average of 400 units a day. They were experienced, and it was believed that only automatic machinery could lower the costs of the operation. Nevertheless, three years later, after the installation of most of the improvements above outlined and without automatic machinery, they were averaging 600 units per day, with one less worker—an increased production of 50 per cent. with 12 per cent. less labor. The more uniform quality of the material delivered to the calender, and the more favorable shop conditions, had resulted in fewer interruptions and in the production of a larger quantity of usable finished product.

It is the writer's firm belief that if these higher standards of mechanical practice and precision, with more scientific methods of controlling processes and handling materials, as above outlined, are adopted, it will be entirely possible to put many rubber articles on the market with a guaranteed advance date—molded in the article or indelibly stamped on fool-proof packages—which will tell positively just when the rubber manufacturer's responsibility ends, as in the case of the kodak film industry. It will then be the concentrated incentive of the manufacturer not only to endeavor to advance the date as far ahead as possible, but also to see to it that the product is so well made that under normal usage it will not have to be returned for credit before the expiration of the guaranteed date.

When such a condition shall have been reached, the rubber industry will be beyond the cause for the complaints of the present unhappy consumers of rubber products, and its position will be alongside of, and not behind, the higher developments of other industries. Such a consummation need not await the millennium, for its accomplishment by the industry, as a whole, but only the awakening of the individual rubber manufacturers to the opportunity that is before them.

RUBBER ENZYMES.

It is generally admitted that enzymes are the cause of the tack in rubber. Dr. Uttée states that they can be destroyed by heating the latex or even the gum for 15 minutes at 176 degrees Fahrenheit.

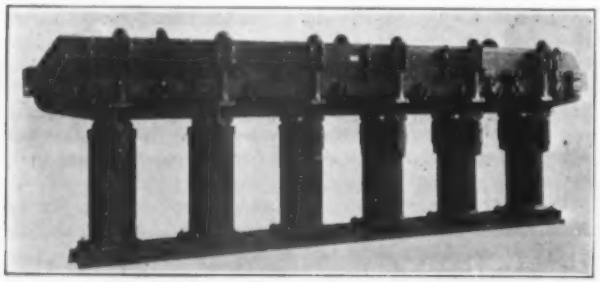
New Machines and Appliances.

TWO NEW ADAMSON MOLD PRESSES.

THIS hydraulically operated mold press, with swing bolts which may be quickly removed, shows a vast improvement over the ordinary hose vulcanizing press.

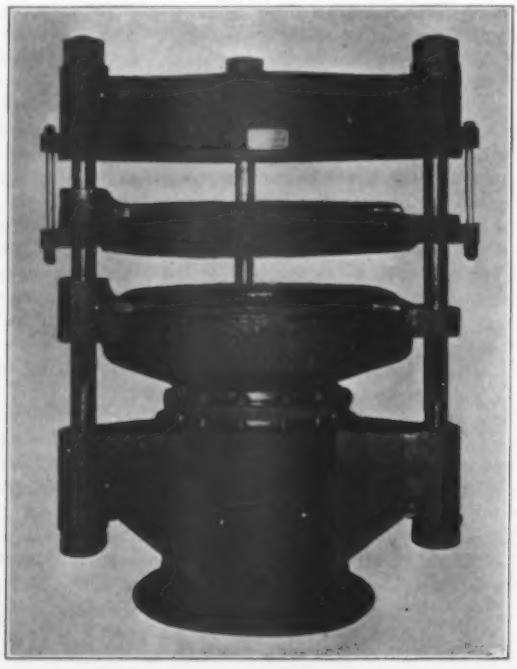
The machine, which is shown herewith, receives molds up to 24 inches in width and 20 or more feet in length.

In operation the top mold and platen, which are clamped together, are raised sufficiently to allow the operator ready access



to the lower mold. The lengths of hose, on their respective mandrels, are now placed into the cavities of the lower mold, the upper mold and platen are then lowered, and then the bolts are swung into position. Water under pressure is simultaneously turned into the 6 cylinders, forcing the rams upward and the two mold sections together, thereby exerting the necessary pressure on the hose. The steam is then turned on until the cure is complete.

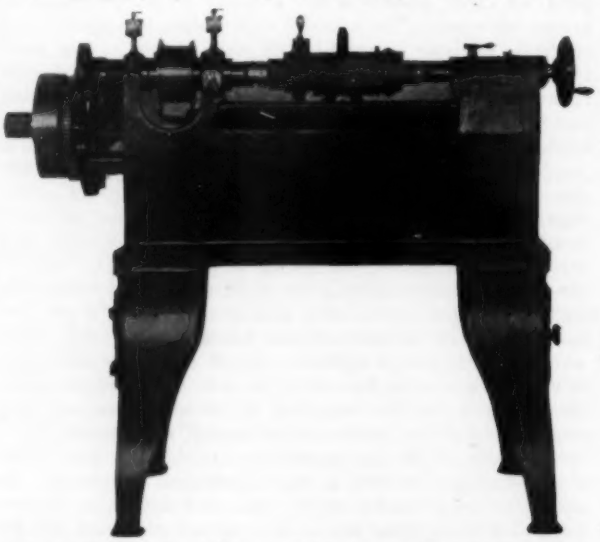
The second illustration shows a new bicycle tire mold press operated hydraulically, with a swinging lower mold to facilitate the insertion or removal of the tire.



It may have a number of platens arranged one above the other, to any desired height. The lower platen can be swung out clear of the machine by the handle, as shown, and the tire mold inserted. The platen and mold are then swung back into alignment with the upper platen, when the ram action is started. The upper platens have an opening to afford inflation of the tires when the press is closed. First, the lower platen will be forced up against the upper platen which, in turn, will force the lower platen of the next tier against its upper platen. The continued application of the ram will force tight joints, when the steam is admitted for curing the tires. [Adamson Machine Co., Akron, Ohio.]

WILLS' AUTOMATIC JAR RING CUTTING LATHE.

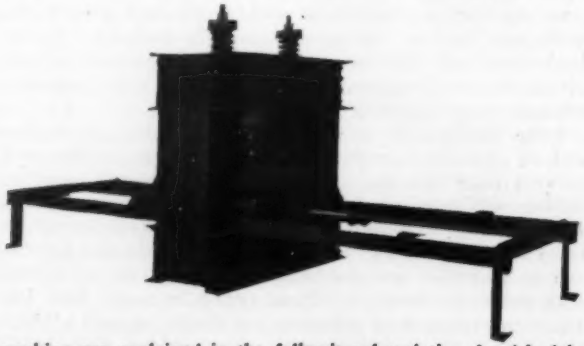
The special feature of this machine is an intermittent rotating star gear which controls the travel of the disc cutting knife and is automatically locked in position during each cut, thus in-



suring uniformity in thickness of the rings produced. The illustration shows the assembled machine with a partly cut rubber sleeve on the mandrel. [United States patent No. 1,036,763, Arthur J. Wills, North Brookfield, Massachusetts.]

SOUTHWARK TIRE BEAD PRESS.

The illustration herewith shows a special type of quick-acting press for forming and shaping beads. The advantages of this



machine are explained in the following description furnished by the manufacturers:

"The moving table is controlled by air cylinders, thus permitting the table to be moved in and out of the work very quickly, necessitating the minimum amount of labor. The table is sufficiently long to permit the bead being taken out and a

new one inserted for pressing, while the press is doing actual work. The press is made entirely of steel castings instead of built-up beams and cylinders. A very low moving table makes it unnecessary to lift the tires, thus making handling easier. The ram is brought down to the work through idle stroke with tank water so that no power is required except for actual work. The press is controlled by a patented operating valve so designed that when the press is at rest the water is automatically by-passed." [Southwark Foundry & Machine Co., Philadelphia, Pennsylvania.]

THE C. C. PRESSURE REGULATOR.

Whenever it is necessary to use steam or air at a pressure lower than that of the initial pressure an automatic pressure regulating device is recommended. Such regulators are useful in rubber mills, particularly in connection with vulcanizers and dryers.

The C. C. Pressure Regulator, Type A, shown herewith, is a simple main valve operated by a piston under the control of an auxiliary valve. The adjustment of the auxiliary valve and the control of the service pressure are effected by a hand wheel which compresses a regulating spring.

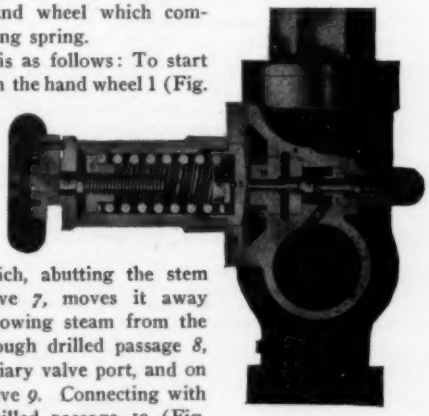


FIG. 1.

The operation is as follows: To start the regulator turn the hand wheel 1 (Fig. 1) to the right, compressing the regulating spring *2*. Diaphragm-hub *5* is forced inward, deflecting the diaphragm *6* which, abutting the stem of auxiliary valve *7*, moves it away from its seat, allowing steam from the inlet to pass through drilled passage *8*, through the auxiliary valve port, and on into annular groove *9*. Connecting with this groove is drilled passage *10* (Fig. 2), through which steam passes to the top of piston *11*. The piston *11* being of greater area than the main valve *12*, the latter is forced from its seat, permitting steam to enter the service system.

The pressure in the service side of the valve is introduced into the chamber *13* (the inner side of diaphragm *6*—Fig. 1) through drilled passage *14*, shown in both Figs. 1 and 2.

When the steam pressure against the inner side of the diaphragm *6* is greater than the pressure of the regulating spring *2* on the outer side, the latter is forced back. The auxiliary valve 7 is permitted to close, cutting off the supply of steam above the piston *11*, and the main valve *12* closes. As the service pressure falls, the regulating spring *2* again deflects the diaphragm *6*, which opens the auxiliary valve *7*, followed by the opening of the main valve *12*.

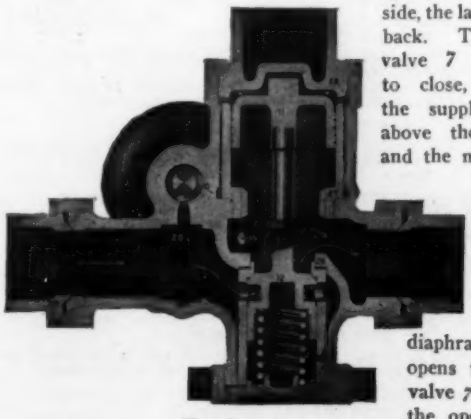


FIG. 2.

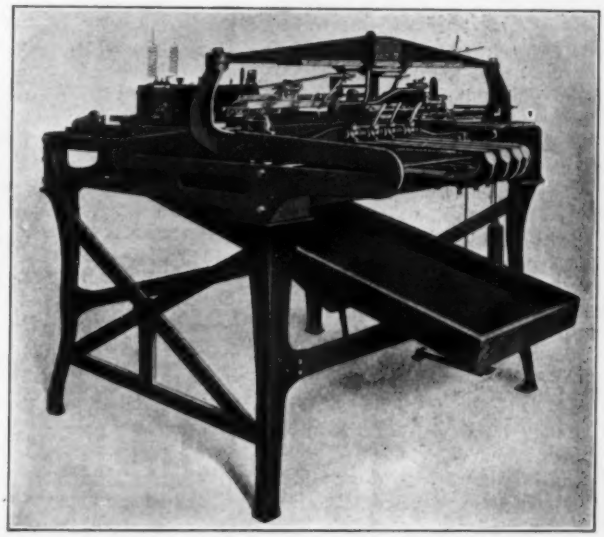
The diaphragm *6* is really in a state of balance between two forces, the regulating spring *2* on the outer side, and the service pressure in chamber *13* on the inner side. The degree of compression of the regulating spring *2* determines the service pressure which is automatically maintained up to the capacity of the regulator. The service pressure is not affected by fluctuations of the initial pressure so long as there is sufficient excess of the latter to furnish the necessary operating power.

The dirt and scale usually carried by the steam is caught by the metal screen *20*. [Crane Co., Bridgeport, Connecticut.]

REED POWER PATTERN GRADER AND CUTTER.

Footwear patterns cut by hand are always imperfect and have to be carefully trued up, also by hand, before the binding edge can be put on. The power machine, illustrated herewith, operates with a pantagraphic movement, cutting and grading the patterns in one rapid operation, completely ready for the application of the binding edge.

The machine can be set for any size by an automatic mechanical device necessarily accurate and always uniform. Gage scales secure perfect and uniform grades which require no further alteration or filing. By the use of these scales, patterns may be reproduced by merely keeping record of the gage number on the pattern—thus allowing repeat orders to be easily filled.



The variety of work which may be accomplished includes keeping laps even on all sizes; grading difficult and stay patterns; locating eyelet holes and grading top facings. By using traces of different sizes, patterns may be cut out either of full size or with allowance for binding. The cutting mechanism consists of a punch and die, making 2,100 strokes per minute. The power may be furnished through belts or electric motors. Factories equipped with this machine should turn out a new set of finished and graded patterns in half the time now required. [Charles E. Reed & Co., Chicago, Illinois.]

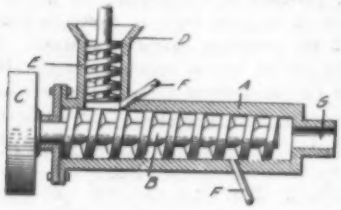
MACHINERY PATENTS.

PRICE'S VACUUM CHAMBER TUBING MACHINE.

IN order to obtain rubber in a compact form free from air, moisture and gases, Price has invented this apparatus for the treatment of plastic materials.

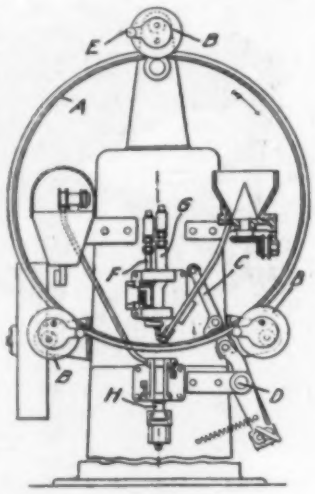
The accompanying longitudinal section shows only one of the several ways in which the rubber may be fed to the cylinder *A*. The feed hopper *D* may be horizontal and diversed tandem, or feed rolls arranged in the hopper, or a feed plunger in the hopper used to force the material to the cylinder.

The material is fed into the hopper *D* and is forced by the stock worm *E* towards chamber *A*. When the material reaches the opening into the larger chamber *A*, it expands and is subjected to the direct action of a vacuum through one or more pipes *F*. This removes all entrapped air, moisture and gases. An effectual seal is provided by the movement of the material in the hopper and in the large chamber *A*, thus allowing an efficient vacuum to be exerted. The material is then carried along by stock worm *B*, rotated by belt wheel *C*, to the discharge outlet *G*. [Raymond B. Price, assignor to Rubber Regenerating Co., United States patent No. 1,156,096.]



MACHINE FOR APPLYING NON-SKID STUDS.

Steel studs of leather non-skid treads are evenly spaced around the tread in three staggered rows by the machine illustrated herewith. Referring to the drawing—the hoop shaped template *A* has three rows of holes corresponding to the studs of the tread, and is supported by three rollers *B*. It is turned intermittently by a pawl that engages teeth cut on the inner periphery of the template. The lever *C* that moves the pawl rocks on shaft *D* through a cam on the driving shaft. The template *A* is adjusted transversely for a new row of studs by the eccentric sleeves of the rollers *B* operated by handles *E*.

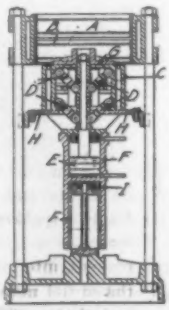


The leather tread is slipped on the template, which is then placed in the machine. The punch *F*, guided by the template, punches a hole, and a stud is brought forward and inserted from below by the plunger *H*. A washer, fed from above the template, is dropped over the stem of the stud, which is then riveted by the hammer *G*. [Dunlop Rubber Co., Limited, and F. J. Keegan, British patent No. 10,214, 1914.]

HYDRAULIC TIRE VULCANIZING MOLD AND PRESS.

In this process the tire cover is molded and vulcanized simultaneously by placing the cover, in the form of a cylindrical ring, in contact with a suitably grooved heated ring, and pressing it by radially moving segments.

In the illustration *A* is the ring, which is heated by making it a part of a steam-heated chamber, and *C* is one of the movable segments. When two or more tires are to be molded and pressed, either ring *A* may be grooved, or additional rings, as *B*, may be employed.



The radial segments are forced outwards by the toggle-joints *D*, joined to the piston *E*, working in the upper part of hydraulic cylinder *F*. The radial segments slide between the fixed parts *G* and *H*, and are attached to the cylinder *F*, which moves over a fixed piston *I*. The two pistons are separated by a diaphragm about two-thirds of the way up in the cylinder.

In operation, water under pressure is admitted above the fixed piston *I* to raise the cylinder *F* and press head, and when further upward motion is stopped by plate *H*, water under pressure is admitted under the piston *E* to straighten out the toggle-joints and compress the tire cover. [Dunlop Rubber Co. and C. Macbeth, British patent No. 11,732, 1914.]

OTHER MACHINERY PATENTS.

UNITED STATES OF AMERICA.

ISSUED OCTOBER 19, 1915.

1,157,117. Collapsible core. T. Midgley, Sr., and T. Midgley, Jr.—both of Worthington, Ohio.
1,157,118. Method of constructing collapsible cores. T. Midgley, Sr., and T. Midgley, Jr.—both of Worthington, Ohio.
1,157,263. Tire core. E. E. Tannar, Akron, Ohio.
1,157,340. Repair vulcanizer. C. Taarud, Minneapolis, Minn.
1,157,420. Apparatus for making hollow rubber articles. F. T. Roberts, Trenton, N. J., assignor to The Aranar Co., Cleveland, Ohio. (See THE INDIA RUBBER WORLD, August 1, 1915, page 600.)

ISSUED OCTOBER 26, 1915.

1,157,694. Process of insulating wire. O. T. Hungerford, Belleville, N. J.
1,157,751. Repair vulcanizing apparatus. J. W. Arthur, Warren, Ohio.
1,157,759. Dental vulcanizer attachment. T. T. Cater, Columbus, Kan.
1,158,278. Wrapping machine. W. B. Pierce and F. M. Pierce, assignors to Pierce Wrapping Machine Co.—all of Chicago, Ill.
1,158,284. Apparatus for splicing inner tubes. H. Raflovich, New York, N. Y.
1,158,315. Vulcanizer. C. A. Shaler, Waupun, Wis.
1,158,405. Machine for wrapping coils of wire. F. M. Pierce and W. B. Pierce, assignors to Pierce Wrapping Machine Co.—all of Chicago, Ill.
1,158,406. Wrapping machine. F. M. Pierce and W. B. Pierce, assignors to Pierce Wrapping Machine Co.—all of Chicago, Ill.

ISSUED NOVEMBER 2, 1915.

1,158,506. Tire making machine. J. Koch and J. F. Zimmerman—both of Akron, Ohio.
1,158,509. Tube vulcanizer. F. W. Kremer, Rutherford, N. J.
1,159,138. Pulverizing machine. Dominique Vecchini, New York, N. Y., assignor to Franco-American Rubber Co., Wilmington, Del.
1,159,197. Repair vulcanizer. D. P. Einrem, Springfield, S. D.

ISSUED NOVEMBER 9, 1915.

1,159,646. Bead tool. F. F. Brucker, assignor to Miller Rubber Co.—both of Akron, Ohio.
1,159,792. Tire mold. G. J. Paynter, Philadelphia, Pa.
1,159,840. Tire building machine. W. H. Hermann, Lancaster, Ohio.
1,159,895. Machine for making tubes and tires. C. A. Canda, Elizabeth, N. J.
1,159,947. Mechanism for winding insulated electric cables. G. A. Johnson, Newark, N. J.
1,160,075. Tire making machine. A. H. Harris, Youngstown, Ohio.

UNITED KINGDOM.

ISSUED OCTOBER 6, 1915.

14,388 (1914). Brush with bristles set in rubber. W. J. Mellersh-Jackson, 28 Southampton Buildings, London.
14,390 (1914). Brush with bristles set in rubber. W. J. Mellersh-Jackson, 28 Southampton Buildings, London.

ISSUED OCTOBER 13, 1915.

14,659 (1914). Devulcanizer. M. Chapel and J. Thiberville—both of 41 Boulevard des Capucines, Paris.
14,750 (1914). Testing golf balls. S. H. McQuown, "Wathcote," Park Road, Twickenham, Middlesex.
14,994 (1914). Tire building machine. F. C. Morton, 73 Dana street, Cambridge, Massachusetts, U. S. A.

ISSUED OCTOBER 20, 1915.

15,500 (1914). Tire making and vulcanizing press. H. J. Doughty, Edgewood, Rhode Island, U. S. A. (See THE INDIA RUBBER WORLD, January 1, 1915, page 199.)

ISSUED OCTOBER 27, 1915.

2,922 (1914). Pressure regulator. A. Pártos, 13 Föherdeg Sándor utca, Budapest, Hungary.

ISSUED NOVEMBER 3, 1915.

16,134 (1914). Braiding machine. J. Lundgren, 3357 N. 15th street, Philadelphia, and Carlson-Wenstrom Manufacturing Co., Dover, Del.—both in U. S. A.

THE FRENCH REPUBLIC.

476,642 (December 2, 1914). Improved pneumatic tire casing and a process and machine for manufacturing it. A. M. Kobiolke.

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

288,709 (March 6, 1912). Tire making machine. The De Laski & Thropp Circular Woven Tire Co., Trenton, N. J., U. S. A. Represented by M. Löser and O. H. Knoop, patent-lawyers, Dresden.

The Editor's Book Table.

DIE TECHNOLOGIE DES KAUTSCHUKS. BY DR. RUDOLF DITmar A. Hartleben, Vienna, Austria, and Leipzig, Germany. 1915. [Large, 8vo, 597 pages, 520 illustrations.]

THIS handbook, in German, on "The Technology of Rubber," is a valuable systematic collection of data dealing with rubber and rubber goods manufacture. The material has been gathered from many published and original sources. The author is proprietor of a government authorized testing laboratory in Gratz, Austria, devoted to the technology of the rubber industry. He has thus had exceptional facilities for the study of the subject. The book embodies the results of factory and laboratory investigations of rubber manufacturing problems. The section on factory plan and equipment, as well as that on processes, represent the best current German practice.

The author states in his preface that the value of his book lies in the fact that the conclusions given were developed by combined studies of theory and practice modified by intimate personal discussion of the topics with practical rubber manufacturers, qualified as specialists to deal with technical problems.

The book has much value for the American manufacturer, particularly in the way of suggestion and comparison of methods.

Below is an outline of the subjects treated, condensed from the contents:

Tapping, gathering, coagulating and preparation of crude rubber, both wild and plantation.

Factory plans and equipment, including power, heating, drying and vulcanizing apparatus.

Reclaiming waste rubber and the manufacture and use of rubber substitutes.

Fabrics used in rubber manufacturing.

Rubber manufacturing machinery for various purposes, general and special.

Space is devoted to details of the manufacture of a large variety of hard and soft rubber goods, such as mechanical, footwear, druggists' sundries, thread, toys, proofed goods, tires, gutta percha articles, balata, belting and synthetic rubber.

OIL, PAINT AND DRUG REPORTER GREEN BOOK FOR BUYERS. September, 1915, edition. Issued semi-annually by Oil, Paint & Drug Reporter, New York. [Board covers, 164 pages.]

This useful guide is well along in its third year, and will, no doubt, be welcomed heartily by both old friends and new. It contains a comprehensive index, including the principal chemicals and compounding ingredients of interest to the rubber manufacturer, and gives the names and addresses of producers and dealers.

STOCK EXCHANGES (LONDON AND PROVINCIAL) TEN-YEAR Record of Prices and Dividends from 1905 to 1914. Frederic C. Mathieson & Sons, London, England. 1915. [Cloth, quarto, 496 pages.]

This is a work of substantially 500 pages, and appears now in its ninth issue; in fact, it contains cumulative data covering prices and dividends from 1905 to 1914.

To the rubber trade, the book is of interest because of the information which it gives in relation to British rubber companies, both manufacturing and planting.

The book has been described as the best and fullest work of reference of its kind in the world. It not only embraces all prominent securities in the various fields covered, but includes a great many of lesser importance. From the preface of this latest edition we quote the following: "The highest and lowest prices in this work being mainly of actual transactions officially recorded on all the different Stock Exchanges of the United Kingdom, the record for 1914 of this portion is necessarily only carried to the end of July, when the Stock Exchanges were closed and war was shortly afterwards declared; the dividends paid, however, are to the end of the year, while notes have been made of the cessation of the number of interest payments. The re-opening of the London Stock Exchange on January 4, 1915, with generally lower prices than those current in the 'Stock Exchanges' Ten-Year Record,' calls attention to the advantages investors now have in being able to obtain higher yields for their capital.

"The rearrangement and writing-off of nominal capital, and the reorganization of companies, continued to be somewhat intricate in many cases, and 'splitting' shares with a higher nominal value into more shares of a lower denomination is still in favor. The attention given to these subjects over such a period as ten years must enhance the value of the tables, which have again increased in number."

RUBBER COMPANIES' POSITION. W. H. RICKINSON & SON, London, E. C., England. 1915. [Board covers, 96 pages. Annual subscription, 21*s.* postpaid.]

This relates to rubber planting companies in the Far East and summarizes the condition and prospects of 91 of them. To quote the editors: "Our object in issuing this handbook is to assist subscribers in forming as near as possible an idea of the present and immediate future position of a company, and the advisability or otherwise of extending or curtailing the field of their investments. The particulars given as regards capital, planted acreage, monthly output, etc., are extracted from the latest reports, balance sheets and circulars issued by the various companies.

VAN NOSTRAND'S CHEMICAL ANNUAL FOR 1913. EDITED BY John C. Olsen, A.M., Ph.D. D. Van Nostrand & Co., New York. [Leather covers, 669 pages.]

This is a valuable compilation of chemical information presented largely in tabular form for convenient reference. There are 116 tables, grouped in several sections, such as general tables of atomic weight, physical constants of the elements, factors for calculation of indirect gravimetric analysis, etc.; calculation of volumetric analysis and gas analysis; physical constants of chemical compounds; specific gravity tables and alcohol tables; equivalents of weights and measures; thermochemistry and stoicheiometry.

RUBBER IN NETHERLANDS EAST INDIA. NETHERLANDS-EAST-Indian-San-Francisco Committee of the Department of Agriculture, Industry and Commerce. J. C. T. Van Dorp & Co., The Hague, Holland. [Paper covers, 12 pages. Illustrated.]

This is a very brief and interesting review of rubber cultivation in Java and Sumatra. It gives a good idea of the developmental work in connection with plantations, together with an account of the rubber trees that have given the best results under cultivation there. The growing of the Palaquium for the extraction of gutta percha, which has been treated at length in various papers, is here summarized.

TWENTIETH CENTURY RUSSIA AND ANGLO-RUSSIAN REVIEW. John Bale, Sons & Danielsson, Limited, London, W., England. [Paper covers, 83 pages. Price, 1*s.* net.]

This is a new quarterly, the aim of which is to give the English-speaking public an intimate idea of Russia in her modern phases.

The land of the Czar has been a closed book, and few realized its nature and needs. A magazine, therefore, that will help the English-speaking world to a better understanding of this vast realm, and its commercial opportunities should certainly be of present interest and value. Of the many papers of interest in the initial number one may be mentioned as typifying the whole, and that is "The Future of Russia as a Trade Center." The new journal, through its excellent beginning, gives promise of taking first rank among the world's reviews.

NEW TRADE PUBLICATIONS.

DRUGGISTS' SUNDRIES CATALOG IN ENGLISH, SPANISH AND PORTUGUESE.

A COMPREHENSIVE catalog of druggists' sundries and surgical rubber goods, bearing their registered trade-mark, "Alpha," is published by Parker, Stearns & Co., Brooklyn, New York. A complete assortment of the goods manufactured by this company, including syringes, water-bottles, atomizers, nursing bottles and nipples, operating room goods, etc., are presented in their proper colors. The catalog and index consists of 152 pages, bound in heavy paper covers, embossed with a design showing *seringueiros* engaged in tapping rubber trees, and is printed in English, Spanish and Portuguese.

THE PICHER LEAD CO.

"Protective Coatings for Structural Metals" is the title of a timely booklet issued by the Picher Lead Co., of Chicago, Joplin, and New York.

No one will contradict the statement made in this brochure that "The necessity of conserving the enormous quantities of iron and steel used nowadays in structural work of all sorts has brought architects and engineers to a very serious consideration of the causes of corrosion or oxidation of structural metals and the means of protecting them."

The booklet also enumerates the points of excellence desired in a metal-protecting paint, which are briefly color, opacity, firmness, toughness, durability, cheapness, and high basicity.

Sublimed lead pigments, by test, have all of these points when compared with other commercially available pigments, and of these is specially urged sublimed blue lead.

CATALOG OF "PHILKOB" PACKING AND RUBBER GOODS.

A catalog of packing and other mechanical rubber goods illustrates in 56 pages the goods sold by the publisher, P. W. Koebig, 116 Broad street, New York, under his trade-mark "Philkob." It plainly states, in connection with each packing, the materials from which it is manufactured and the uses for which it is adapted, as well as sizes, weights, prices, etc. The foreign buyer will find the weights and dimensions of standard packages, in metric as well as ordinary figures, an important aid.

THE NORTH BRITISH RUBBER CO., LIMITED.

The North British Rubber Co.'s catalogs are always interesting, and their latest, "North British Sand Shoes and Tennis Shoes" and "North British Linen-Finish Waterproof Collars, Cuffs and Fronts," are no exception. Speaking of shoes, their 1916 styles will remain much as for the past season. The company lay stress upon the fact that the shape and finish are all that could be desired. Particular attention is directed to their khaki-colored shoe. Another specialty is the special grooved soling to get over the trouble of breakage. The grooves do not run directly across the sole, but, instead, are at somewhat of an angle, which quite obviates the difficulty previously experienced.

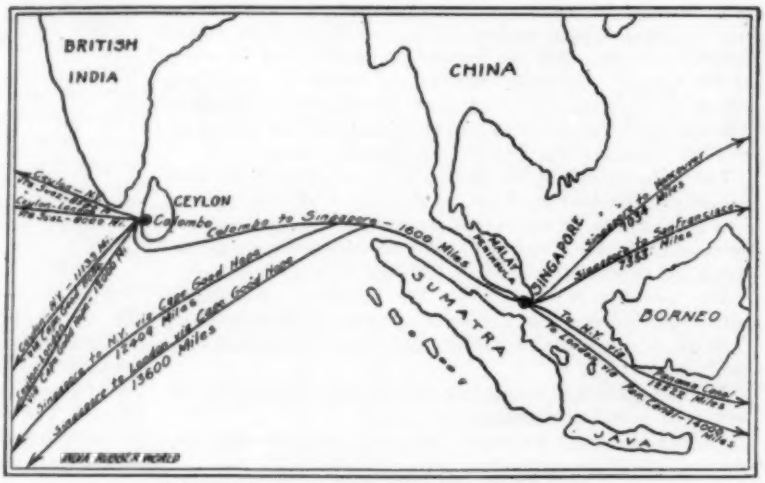
In the matter of linen-finish waterproof collars, cuffs, and fronts, pleasing varieties of shapes and styles are illustrated. All are made either with plain or metal buttonholes, the latter measurably lengthening the serviceable life of the different articles.

The company announces that the serious advances in the prices of raw materials have necessitated higher prices for these manufactured articles, and made it wiser to confine output only to the finer products. Therefore, certain previous grades will not be continued, and only that quality which the company calls "The Best" will be produced.

RUBBER ROUTES FROM THE FAR EAST.

WITH the Panama Canal blocked by landslides and the possibility that the Suez Canal may any day be closed to facilitate the passage of troops, American manufacturers are becoming apprehensive in regard to the supply of plantation rubber.

There are really no grounds for such apprehension, as the accompanying map and the following figures will show. Singapore, a prominent rubber shipping port, is nearer to New York via the Cape of Good Hope than it is to London by some 1,200 miles. The difference in the distance from Singapore to New York by way of Panama and the Cape is very small and is in favor of the latter route; from Singapore to New York via Panama is 12,522 miles, via the Cape of Good Hope, 12,409 miles, or 113 miles less; to London, via the Cape of Good Hope, is 13,600 miles, a difference of nearly 1,000 miles in favor of New York; while London is 14,000 miles from Singapore by way of Panama, 1,478 miles further than New York by the same route.



MAP OF RUBBER ROUTES FROM THE FAR EAST.

There is still another route, already tested with satisfactory results, by which communication with Singapore could be established. From Singapore to Vancouver, British Columbia, is but 7,034 miles, to San Francisco 7,352, and both of these ports have direct rail connection with New York and the Eastern States.

That rubber shippers are beginning to recognize the importance of these figures is shown in the latest receipts of plantation rubber. Six months ago, in May of the current year, to be exact, we received at the port of New York 4,344 tons of plantation rubber, of which 1,260 tons came directly from Singapore and Colombo and 3,084 tons from Liverpool and London. For the month of September, of the current year, our receipts of plantation rubber at New York amounted to 5,019 tons, of which 3,349 tons was shipped directly from Singapore and Colombo, the balance, 1,670 tons, coming by way of London or Liverpool.

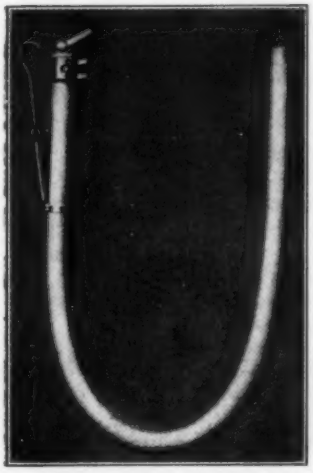
From the above figures it does not look as though the closing of both the canal routes would seriously interfere with our receipts of plantation rubber. In fact, the American importer appears to have adapted himself in advance to the possibilities of the situation.

J. Spencer Turner Co., 86 Worth street, New York, is doubling the capacity of its duck mills, which are expected to turn out the increased product by January 1, 1916.

New Goods and Specialties.

THE HIGHEST PRICED RUBBER TUBING IN THE WORLD.

THREE-QUARTER inch rubber tubing at a little over $6 a foot indicates something of greater value than the ordinary squirted compound of zinc oxide and rubber. A trifle over that price is charged for the patented electric warming tube shown in the accompanying illustration. The tube is used with a special inhaling apparatus. It is built in plies, the rubber wall being only an eighth of an inch in thickness. Between two of the rubber plies is an inner coil of copper wire through which an electric current is passed. This heats the gas before it reaches the patient, thus bringing it to exactly the temperature of the human body. Between the outer plies of rubber is another coil of piano wire which makes it impossible for the tube to kink. [The S. S. White Dental Manufacturing Co., Philadelphia, Pennsylvania.]



NEW FEATURES IN THE "PERFECTED" DATER.

A rubber date band radically different from anything of the kind hitherto used in dating stamps has been introduced in the "Perfected" Lock Band dater illustrated herewith. These bands are of the type-block variety, with the blocks a trifle lower than usual, and each character is molded with a small air cavity, making it in effect a miniature pneumatic cushion. The bands are non-stretching and are made without woven fabric of any kind, their reinforcement consisting of fish-line silk and the joining of the ends being effected by means of a metal clasp which engages the center of the silk.

Several other features of the dater represent improvements in design and construction, included among these being the method of moving the date band. This band is turned by a toothed drum operated by a finger button on the side of the handle. Each dater is also fitted with a regular full thickness air cushion. [The R. H. Smith Manufacturing Co., Springfield, Massachusetts.]

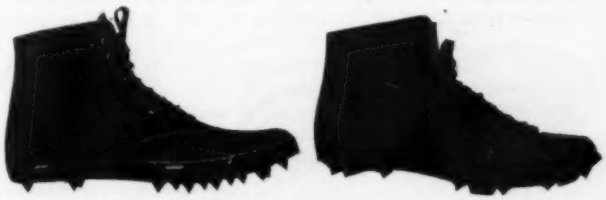
THE "MADERITE" TENNIS BALL.

In order that a tennis player may make his strokes tell certainly, each ball must respond to those strokes in a like manner. To obtain this uniformity the greatest care must be used throughout the entire process of making the ball—in molding the core, gauging the weight, etc. An unsual degree of this valuable quality is claimed by the manufacturers for "Maderite" tennis balls. The highest grade new rubber, tested by chemists in their laboratory, forms the core. Felt of the correct weight and of a specially resistant quality, newly discovered, is used for the cover and firmly gripped to the surface of the core at every point. When complete, each ball is tested in every way before leaving the factory, and fully guaranteed. The manufacturers are receiving excellent reports from this new ball, which is evidently destined to be popular. [The Seamless Rubber Co., New Haven, Connecticut.]

CANADIAN CONSOLIDATED FOOTWEAR.

In the family bathroom, the youngsters are apt to be overvigorous in their ablutions and splash the surroundings generally, as well as themselves in particular. The "Happy Thought" bathroom slipper is probably the idea of some long-suffering paterfamilias. It is made of waterproof duck, in men's sizes only, and is thoroughly practical and inexpensive.

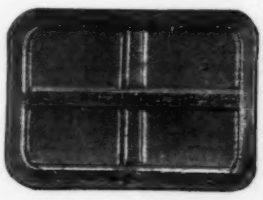
A sport shoe especially popular for running is called the "Surefoot Balmoral." It has black rubber foxing, a rubber sole and rubber cleats. The top is made of dark tan leather, and the shoe is reinforced with ankle pads and has a leather insole and counter. A feature of the "Marathon Balmoral" which makes it an exceptionally satisfactory shoe for athletics is the solid rubber



spiked sole. It has all the advantages of the steel spiked shoe, with none of its detrimental effects. The rubber spikes do not tear up the turf on the putting greens of the golf course, nor scratch the floors of the clubhouse when one enters after the game. This shoe is made in the Bell vamp pattern, with blue, black or tan duck tops, as desired. It also has leather insoles. [Canadian Consolidated Rubber Co., Limited, Montreal, Canada.]

A WATERPROOF FOLDING SEAT.

The dampness of the English climate makes sitting on the ground at any season of the year a foolhardy proceeding. In this waterproof, woolen-lined seat, which can be folded up and put in one's pocket, however, the traveler, the sportsman, and also the ordinary citizen in the British Isles will find a most convenient, comfortable and healthful device. Incidentally, other countries, notably our own, have damp days. [The Altrincham Rubber Co., Altrincham, England.]



ALL RUBBER HEEL LINER.

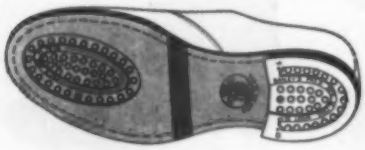
The "Nu-Grip" heel liner here shown no doubt makes good the promise of its name. The non-slipping quality of rubber when in contact with dry surfaces is well known, and this device is made entirely of rubber, the surface intended to lie next the stocking being checked to further insure the grip. It is shaped to fit the back of a low-cut shoe, and is attached by applying rubber cement to its smooth surface and to the counter of the shoe. After allowing five minutes for drying, it is simply placed in position and pressed firmly against the counter. The "Nu-Grip" is supplied in several sizes, for both men's and women's shoes, in either tan, black or white. [The Scholl Manufacturing Co., Chicago, Illinois.]

RUBBER GOGGLES FOR PROTECTION AGAINST GASES AND ACIDS.

With the exception of the lenses, which are held in a special groove of the eye cup, and can be readily removed, these goggles are made entirely of rubber. They are of one-piece construction, can be easily cleaned, are dust and rain proof, and light and sanitary. They afford complete protection to the eyes, and yet are sufficiently ventilated to be worn with comfort. Chemists, or other persons working amid gases, acids, fine dust, etc., will find them particularly valuable. An elastic head band, adjustable to any size, holds the goggle firmly and comfortably against the face. [T. A. Willson & Co., Inc., Reading, Pennsylvania.]

THE "MONKEY GRIP" RUBBER SOLE.

A feature which renders the rubber sole here illustrated of especial value in athletic sports, and upon slippery pavements, is the oval-shaped raised design covering the ball of the foot, and provided with flat-ended studs which lend the clinging quality suggested by the name, "Monkey Grip." This sole is a particularly satisfactory substitute for the spiked shoe often worn on the golf links, which ruinously tears up the turf on the putting greens. It is made of very tough-fibered rubber, and the manufacturers claim it gives exceptional service. When worn in combination with the "Monkey Grip" heel, which has U-shaped ribs and flat-ended studs forming a non-slipping bottom, the wearer is well equipped for the most unfriendly elements or strenuous sports. [C. J. Bailey & Co., Boston, Massachusetts.]

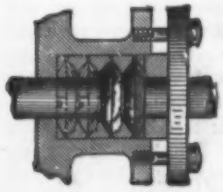


A RUBBER AND METAL PACKING.

It has always been a difficult matter to obtain a metallic packing which can be installed without making changes in rods or boxes. This problem has been solved by "Noheet" metallic packing, a patented article made by the Lubricating Metal Co., 2 Rector street, New York.

"Noheet" metallic packing is made of alternating rings of "Noheet" bearing metal and rubber, and is so constructed that in use the metal, not the rubber, is forced into contact with the rod. The metallic rings are made to fit the various sizes of rods, thus doing away with extra work of installation.

It is especially adapted to ammonia pumps, steam piston rods and valve stems, oil pumps, chilling machines, air compressors and packing service of every description.



A new porcelain mogul-base socket, equipped with ¾-inch or ½-inch aluminum caps, as desired, has a rubber gasket which makes the joints between the upper and lower portions absolutely tight and therefore weatherproof. [Harvey Hubbell, Inc., Bridgeport, Connecticut.]

A new shoe designed for the outdoor worker, and labeled the "Workshu", has rubber soles, and canvas uppers of the same fabric as that used in automobile tires. A very comfortable shoe is thus furnished at a moderate price. [Amherst Boot & Shoe Co., Limited, Halifax, Nova Scotia, Canada.]

HARD RUBBER HANDLES.

Umbrella and parasol handles in simple and ornate designs are being manufactured by the Hanover Vulcanite Co., the well-known German makers of hard rubber specialties, soft rubber toys and novelties. The illustration shows one of the more ornamental handles, which has a panelled recess on either side, one containing a neat bevel plate glass mirror and the opposite a small comb. Other patterns include mirror only. A large variety of the usual straight or bent forms are shown, all more or less ornamented. [Geo. Borgfeldt & Co., New York.]

THE "EBONITE" BOWLING BALL.

Bowling balls made of hard rubber throughout are, of course, not an entirely new thing, but this particular ball is a recent product, specially constructed, the company claim, to give life-long service, without cracking or splitting, and to roll accurately. It is made in four sizes: Small size, 4½, 4¾ and 5 inches in diameter, the large size, 27 inches, weighing 14, 15 and 16 pounds. The trade mark encircling the holes of the ball is in the form of a red dumb bell. [Stowe & Woodward Co., Newton Upper Falls, Massachusetts.]

COMBINATION SHAVING AND MASSAGE BRUSH.

The rubber massage brush attached to this shaving brush provides a handy contrivance for softening the beard when shaving. It is intended to be used after applying the lather. Also, if used after shaving, it stimulates the circulation and tones up the skin. The bristles of the shaving brush are also set in rubber, measure 2¼ inches in length, and are made of fine white or mixed badger hair. [Montgomery Ward & Co., New York.]

GUN BRACKET WITH RUBBER HOLDERS.

A new gun bracket, called the "Universal," for use in hunting duck from a boat, is provided with U-shaped rubber holders which protect the fine finish of the gun as it rests between them. The bracket is attached to the boat in a position which allows the gun when not in service to swing freely, with muzzle pointing upward and in the direction the boat is going. It is thus ready for immediate use, and there is no danger of shooting a hole in the bottom of the boat. [New Process Specialty Co., Milwaukee, Wisconsin.]

INFANTS' ALL RUBBER TRUSS.

This is a bandage used for cases of umbilical or navel hernia in infants and youths. If put on a baby soon after birth it avoids all danger of navel rupture. The sponge rubber pad is velvety in texture, and will not slip. It is provided with a button in the center and a small strip of rubber at one end. The narrow rubber belt has several holes, allowing for adjustment as to size, the proper hole being stretched over the center button and the end of the belt being passed through the rubber strip in the manner of a buckle. To clean this truss it is only necessary to dip it in hot water and press it in a towel or cloth. [Akron Truss Co., Akron, Ohio.]

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Rubber Toys for the Holidays.

RUBBER toys for the holidays present new variety this season, attributable in no small degree to the enterprise of American rubber manufacturers.

As usual, the hand-made German toy animals are works of art. This year there are some notable additions in this line, offered by George Borgfeldt & Co., the well-known New York importers. The very latest German toys follow military models, as a natural consequence of the dominating conditions in Europe. These, however, are not obtainable in the American market today, although there is no shortage of German and Austrian toys.

The Mechanical Rubber Co., Cleveland, Ohio, is making a special feature of white rubber toys. Special claim is made for these goods that they are absolutely free of all soluble, injurious pigments or other deleterious matter; consequently are perfectly suitable for the use of the youngest children, whose chief pleasure is in mouthing their toys.

Particularly attractive is the line of toy balloons, inflated balls and "Rubber Bubbles" of the Faultless Rubber Co., Ashland, Ohio. The balls are made both in solid colors and in parti-colored bandings. The surfaces are printed with a variety of human and mechanical figures and various decorations of wild and domestic animals and comic faces. "Rubber Bubbles" are a substitute for soap-bubbles. They are thin rubber balloons in attractive colors, provided with inflating pipes and self-closing valves for retaining the air. Still another novelty in inflatable toys is the pocket punching bags. These are good-sized, stout wall, decorated balloons made with self-closing valve and provided with elastic cord and handle.

The illustrations show the attractive and appropriate Christmas designs and verses with which the holiday balloons are ornamented. They are particularly suitable as tree decorations and guaranteed to delight the heart of any young American.

BALLS AND BALLOONS OF THE FAULTLESS RUBBER CO.

Made in Red, White, Blue and Other Colors, and Are Fine Examples of Artistic Dipped Work.

MECHANICAL RUBBER CO.'S WHITE TOYS.

Non-Poisonous and Very Artistic.

TOYS HANDLED BY GEORGE BORGFELDT & CO.

Made Chiefly in Brilliant Reds, Except the Kewpie, Which Is White, with Movable Arms.

The Obituary Record.

GEORGE E. MELIUS.

GEORGE ESLEY MELIUS, vice-president and treasurer of the H. O. Canfield Co., Bridgeport, Connecticut, died at his home in that city on October 28, after several months illness, at the age of 57 years.

Born in New York City and educated at its public schools and at the College of the City of New York, which conferred on him the degree of Bachelor of Arts, he took up the study of medicine, which he followed for two years before deciding that he did not wish to be a doctor. In 1885 he accepted a position as bookkeeper for the H. O. Canfield Co. and remained in the service of that corporation for the rest of his life, except while United States deputy collector of customs in 1900. His advancement with the company was steady and progressive until he finally became its vice-president and treasurer.

GEORGE E. MELIUS.

A member of the Algonquin Club, the Seaside Club, the Commercial Travellers' Association, the Bridgeport Business Men's Association (of which he was for a time president) and a thirty-third degree Mason, he took an active interest in the affairs of these organizations and enjoyed the esteem of his fellow members and of his business associates. He is survived by his widow and one daughter.

Mr. Melius had hundreds of warm friends, both in and out of the rubber trade. He was a man of fine presence, cultured, witty and sympathetic. The business community in Bridgeport in particular and the rubber trade in general suffer a great loss in his untimely demise.

ISAAC L. RICE.

Isaac L. Rice, who prior to his retirement from business about two years ago was actively engaged in various manufacturing interests, including the rubber industry, died suddenly of heart disease in New York on November 2, 1915, at the age of 65 years.

He was born at Warenheim, Bavaria, and came as a boy to this country with his parents. After attending the Central High School in Philadelphia, Pennsylvania, he entered the Columbia Law School in New York, and graduated *cum laude* in 1850.

His entry into the business world was made in 1886 as counsel for the Southern Railroad. He was afterwards foreign representative of the Philadelphia & Reading Railroad and was subsequently identified as president with many important manufacturing interests. He was chairman of the Board of Directors of the Consolidated Rubber Tire Co., afterwards changed to the Kelly-Springfield Tire Co., and for a number of years president of the Buckeye Rubber Co., a subsidiary of the Consolidated Rubber Tire Co., and was instrumental in the erection of its plant.

An enthusiastic chess player, and inventor of the "Rice gambit," he was a member of the Manhattan Chess, Rice Chess and Brooklyn Chess Clubs in this country, as well as of the St. George's Chess Club and City Liberal Chess Club of London, England, in addition to his membership in the Lawyers', Lotos, Automobile and Harmonic Clubs, and rounded out his active career by publishing "What is Music?" and contributing many articles to the leading magazines.

Mr. Rice is survived by his wife, whom he married in 1884, and his family, consisting of two sons and four daughters.

Mrs. Rice, on behalf of herself and children, has donated $1,000,000 to found and endow a model hospital for convalescents, in New York, to be known, in memory of her late husband, as the Isaac L. Rice Hospital for Convalescents. The idea was entertained by Mr. Rice before his decease, and plans for the buildings had already been prepared.

PHILIP W. PRATT.

Philip W. Pratt, founder of the Elastic Tip Co., died in New York on the 20th of November.

Seventy-nine years ago Mr. Pratt was born in Abington, Massachusetts, receiving his education at its public schools and at Phillips-Exeter Academy. He entered the lumber business in Abington, but gave it up as uncongenial, and being of an ingenious turn of mind had invented a rubber tip for crutches, chair legs, etc., which he determined to place on the market. He invented several other tips of different designs for similar purposes, and drove about the country with a horse and wagon selling his goods. An arrow tipped with a vacuum cup that caused it to adhere to the target at which it was aimed, the invention of a man named White, of Philadelphia, having attracted his attention, he purchased the right to its use and invented a pistol to discharge it.

About 1870 he went to Boston and renting a small office, carried on the business of manufacturing his specialties there. The business was removed about 1880 to Atlantic avenue where, as the Elastic Tip Co., it is still conducted.

He continued in the meantime his inventive endeavors, the last of which were mostly improvements on the rubber and fabric inventions of Rolon E. Foster. He went with the Foster Rubber Co. in 1903 and was identified with them up to the time of his death.

Besides his elastic tip inventions, rubber heel plugs and machines for impregnating the cloth of which they are made occupied his attention and were the subject of several patents issued to him. One such patent was on an elaborate machine which took fabric from the bolt, impregnated it with rubber and passed it backward and forward under an exhaust fan until dry, so that it could be rolled up at the other end of the machine. One of these machines was in successful use at the Walpole Rubber Co.'s factory. The fabric thus treated was used in making the plugs in the friction plug heels on the market.

From the anti-slipping heel to the non-skid tire was but a rational step. Mr. Pratt took out several patents on tires using these plugs, while in others the fabric was built in a sort of staggered, pyramidal form to prevent slipping. While none of these tires were placed on the market negotiations were in progress for their manufacture at the time of his death.

Mr. Pratt married Sarah Louise Hunt, of Abington, and of their several children but three reached maturity. One was the late D. S. Pratt, president of the Foster Rubber Co., who died in March, 1913. The only living son is Benjamin H. Pratt, sales agent for the Fisk Rubber Co., at San Francisco, who was on his way back to the Pacific Coast after a visit of inspection at the

company's factory when he was halted at Worcester by the news of his father's death. A daughter married George A. Stetson, president of the Elastic Tip Co., Boston.

PHILIP JAMES KING.

At the age of 75 years, Philip James King, famous as a designer of balloons, who is said to have created the first balloon that crossed the English Channel and was the originator of the "fish balloon," the forerunner of the modern airship, died last month in a suburb of London.

DIETRICH MUSHORN.

After being for nearly half a century connected with the Eagle Pencil Co., New York, Dietrich Mushorn died at his home in the Cypress Hills section of Brooklyn on November 10. Deceased was born in Oldenburg, Germany, 71 years ago, and is survived by his widow, three sons and three daughters.

JUSTUS S. HOTCHKISS.

One of the oldest and best-known retired merchants resident in New Haven, Connecticut, Justus Street Hotchkiss, died at his home in that city on November 12, aged 84 years. Prominent for many years in banking circles, he was also largely interested, as a stockholder, in rubber manufacturing companies, one of his cousins being Henry L. Hotchkiss, president of the L. Candee Rubber Co., New Haven. The will of the deceased disposed of an estate of about $2,000,000, a liberal share of which he distributed among relatives and faithful servants and to local institutions. As residuary legatee, Yale University will receive nearly $1,000,000, which will be divided in equal amounts between the academic, law and logical departments, without restriction.

LOUIS GOTTSCHALK.

Louis Gottschalk, F.R.S., an expert chemist who made a special study of the synthetic production of rubber, died last month at his residence, Newark, New Jersey, aged sixty-seven years.

Deceased, who was educated at the University of Munich, Bavaria, devoted much time to the study of the production of synthetic rubber, using some highly explosive ingredients in his process. Two years ago an explosion occurred in his laboratory at Sewaren, New Jersey, by which his wife, who was greatly interested in his work, was fatally injured; and not long afterwards a second explosion resulted in the death of his son-in-law. He had finally succeeded in replacing the explosive chemicals with others of a less dangerous character and received the patents on his process shortly before his death.

RUBBER-SOLED SHOES POPULAR AT KARACHI.

The American consul at Karachi, India, in a recent letter, comments on the rubber-soled canvas sport shoe extensively worn in that district for every purpose, as follows:

The white canvas shoes sold here are of English make. They are cheaper than American-made white shoes, but not so good. * * * The rubber soles, so far as I have seen, are red. Dealers say that white rubber soles are not in demand here, as they cost more. I have personally tested the low canvas shoes with red rubber soles sold locally, and compared them with several pairs of American low canvas shoes with white rubber soles that I brought from the United States. The American shoes cost me about 50 cents more a pair at retail in New York than the British-made shoes in Karachi, and lasted more than twice as long under identical conditions of wear. The American shoes were of better shape, and held their shape better.

The Karachi consulate would like to have American shoe catalogues and price lists to place on file.

AMERICAN RUBBER SHOES IN BULGARIA.

Bulgaria's trade with the United States has always been very fickle and subject to great variations. An example of this is shown by statistics of Bulgarian imports of rubber shoes from this country. In 1913 these imports amounted to 14,552 pairs of rubber shoes, valued at $8,757, whereas in 1914, according to the best available statistics, not a single pair of American rubber shoes was imported into that Balkan state.

FEDERAL TRADE COMMISSION INQUIRIES.

A Federal trade commission has been appointed by Congress, to obtain information by corespondence and personal interview in regard to foreign trade conditions.

Public hearings have been given at various points throughout the country for the purpose of eliciting the desired information, and about 30,000 letters sent out, some 20,000 to American manufacturers and the remainder to others familiar with foreign trade conditions or interested in export commerce. The trade of the world has been so affected by the war in Europe that special opportunities have been opened for American enterprise to enter foreign markets and obtain a largely increased share of their trade.

The letters were accompanied by a return postal card intended to give the commission a broad "yes" or "no" referendum on the advisability of export combinations and to put its members in touch with those willing to furnish facts covering topics on which the commission desires information. It is expressly stipulated that any facts communicated as confidential will be so treated by the commission.

Prompt and frank response is being made by business men to the inquiries, and at last account nearly 10,000 replies had been received, many of the answers being particularly explicit in regard to the advantages and disadvantages of coöperation in foreign trade.

The commission is desirous of completing its investigation with all possible despatch so that the results of its labors may be an aid to Congress in determining what action may be required in the public interest, for the promotion of American trade. An early response to its questions will be appreciated.

NEW REGULATIONS GOVERNING EXPORT PROCEDURE.

The announcement that new United States regulations relative to export procedure will become effective January 1, 1916, has created such intense interest among manufacturers and shippers that the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, D. C., has found it necessary to reprint the new order, with explanatory text. That pamphlet is just off the press and is being supplied free of charge to those interested, upon application to the above-mentioned office. All shipments for export to foreign countries, or to Alaska, Hawaii, and Porto Rico, will be affected by the new regulations.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., required by the Act of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for October 1, 1915.

Editor, Henry C. Pearson, Tompkins Corners, Putnam county, New York.

Managing Editor, None.

Associate Editor, John P. Lyons, Hotel Apthorp, Broadway and Ninety-fourth street, New York.

Business Manager, William M. Morse, 99 North Broadway, Tarrytown, N. Y.

Publishers, The India Rubber Publishing Co., 25 West Forty-fifth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam county, New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) WILLIAM M. MORSE, Business Manager.

Sworn to and subscribed before me this sixth day of October, 1915.

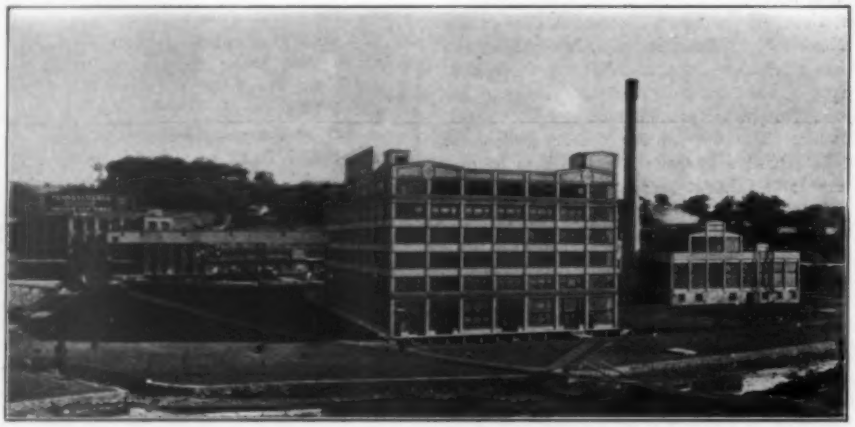
(Signed) FREDK. SPRINGER, Notary Public,
[SEAL] Westchester County.

Certificate filed in New York County. New York County Clerk's No. 204. Register's No. 6370. (My commission expires March 30, 1916.)

THE HOME OF THE PENNSYLVANIA COMPANY.

ABOUT twenty-six miles from Pittsburgh, at Jeannette, in a picturesque valley adjacent to the main line of the Pennsylvania Railroad, are the factory and main offices of the Pennsylvania Rubber Company, a thoroughly modern establishment.

The company started as manufacturers of rubber goods of various descriptions in 1902. The growth of the business made reorganization necessary in 1910, when many new additions were made to the rapidly expanding plant. Last year, the building that forms the central feature of our picture, a six story, fireproof structure 200 x 140 feet, with steel frame, brick walls and concrete floors and columns, was completed, making an addition of 125,000 feet of floor space to the already large plant, which now has in the various buildings, a floor space of 400,000 square feet. Five of the stories are employed for manufacturing purposes, the general offices of the company occupying the sixth or top floor. With the aid of the latest improved machinery the company turns out daily 2,000 "vacuum cup" automobile tires, 5,000 automobile inner tubes, 3,000 bicycle tires and 3,500 hand-made tennis balls. A new power plant, adjacent to the main building, with boilers of 3,000 horse-power and turbo-generators, furnishes power, light and heat for the various departments.



PLANT OF THE PENNSYLVANIA RUBBER CO., JEANNETTE, PENNSYLVANIA.

A feature of the establishment is the solicitude displayed for the comfort and health of employees, which is regarded as a factor in successful work. Light and fresh air are abundant on every floor. For every employee a steel locker is provided and in addition to the excellent lavatory accommodations there are 14 shower baths for the use of employees. The drinking water supplied by never-failing sanitary fountains, is first filtered, sterilized and refrigerated. A dining room, a hospital with skilled attendance, and a laboratory contribute to the completeness of this model home of the "vacuum cup" tires.

BULLET-PROOF TIRES AGAIN.

Five years ago it was attempted to adapt the Casimir Zeglen invention of a bullet-proof fabric to the manufacture of pneumatic tires, but the Philadelphia company which acquired the rights was not successful in the undertaking and failed financially. The problem has been taken up again by a $50,000 corporation, formed recently by Mr. Zeglen in South Bend, Indiana, and known as the Zeglen Tire & Fabric Co. Dr. E. R. Dean, of South Bend, is president of the new company, and F. J. Hardy, secretary.

OPIUM SMUGGLED IN RUBBER TIRES.

The daily newspapers recently reported a new use for rubber pneumatic tires which was discovered in Manila, Philippine Islands. A large touring car was landed on the wharf from a trans-Pacific liner and driven away under its own power. It was afterwards learned that $27,500 worth of opium had been injected into the four tires fitted to the wheels of the car and into three spare tires carried "for emergencies."

CHANGES AT THE FISK RUBBER CO.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has issued an addition to its first preferred stock of $1,500,000, making the total outstanding stock, $14,775,000.

New additions to the plant, now in process of construction, are an administration building; a concrete warehouse, 300 x 120 feet; a manufacturing building, 600 x 120 feet; each building to be six stories high—which will give the company a total floor space of more than 27 acres.

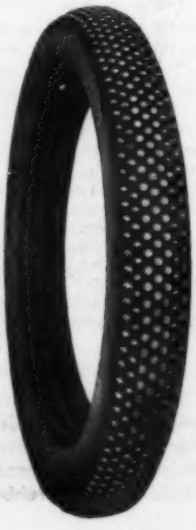
The Fisk Company has appointed R. D. McPhal manager, covering the states of Oregon, Washington, Idaho and British Columbia, with headquarters at Portland, Oregon.

NEW RUBBER COMPANY AT PLAINFIELD.

The Rubber Insulated Metals Corporation, recently incorporated in New Jersey, has purchased the Electro-Chemical Rubber & Manufacturing Co. and now controls its patented electro-chemical process for the permanent attachment of rubber to iron and steel. The company has secured the plant at Plainfield, New Jersey, formerly operated by the Century Rubber Co., and is engaged in manufacturing the Century brand of automobile tires and inner tubes. The capacity of the equipment is 200 or more tires and tubes daily. The factory is in charge of J. A. MacEwan, superintendent, and Dr. Leo Daft, chemist and consulting engineer. It is the plan of the company to add to its tire business a line of mechanical goods, especially such as require the attachment of rubber to metal, as in solid tires, squeeze rolls, valves and other specialties.

A RUBBER FIBER TIRE TREAD.

The main portion of the tire tread here illustrated consists of one continuous piece of specially compounded fiber, ⅛ inch thick on the tread portion, and tapering down to where the tread enters the beads to approximately 1/16 inch. The manufacturers claim that this tread affords unequaled wearing and resilient properties, the side walls giving with the movement of the tire as leather side walls cannot do, and the fiber being tougher than leather, and very flexible and waterproof. The one-piece construction does away with the laps along the side that all leather treads must have, and which let in water. It can be cemented at the bead of the casing, and fitted perfectly to any sort of tire—after inflation to the correct pressure, depending upon the size of the tire—the edges gripping between the rim and the casing, and being held on by the same pressure and in the same manner as the tire itself. [V. K. Sturges Co., Oakland, California.]



News of the American Rubber Trade.

BOSTON WOVEN HOSE & RUBBER CO.

THE Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, has filed with the Secretary of State of Massachusetts a statement of its financial condition, as required by the statutes, for the business year ending August 31, 1915, the details of which are reproduced below:

ASSETS.

Patents		$1.00	
Office furniture		1.00	
Land (assessed value)	$160,900.00		
Buildings	1,536,024.25		
	$1,696,924.25		
Less reserve for depreciation	480,258.17	$1,216,666.08	
Machinery and tools	$1,566,767.32		
Less reserve for depreciation	802,784.65	763,982.67	$1,980,650.75
Cash		$333,033.08	
Accounts receivable		562,094.22	
Merchandise inventory		869,404.14	1,764,531.44
			$3,745,182.19

LIABILITIES.

Loans		.....	
Accounts payable (not yet due)		$49,366.20	
Accrued wages		11,024.52	
Unpaid dividend		380.00	$60,770.72
Capital stock		$2,000,000.00	
Surplus and guarantee		1,684,411.47	3,684,411.47
			$3,745,182.19

At a directors' meeting the regular quarterly dividend of 3 per cent. on common stock was declared and the regular semi-annual dividend of 3 per cent. on preferred stock, both dividends payable December 15 to stockholders of record December 6.

The company will increase the common stock from $1,250,000 to $2,000,000, distributing the new stock to present holders in the form of a 60 per cent. stock dividend.

A DECISION IN FAVOR OF THE MARKS' PATENT.

A recent decision by District Judge Hazel of the United States Circuit Court of Appeals, of New York, declares that the A. H. Marks' patent on recovered rubber (the alkali patent) is valid.

RUBBER COMPANY DIVIDENDS.

At a meeting of the board of directors of The B. F. Goodrich Co. held October 27, a quarterly dividend of 1¾ per cent. was declared on Goodrich preferred, payable January 1, 1916, to stockholders of record December 21.

A quarterly dividend of 1¾ per cent. has been declared on Plymouth Rubber Co.'s preferred stock, payable December 1 to stockholders of record November 16.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on November 7 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., common	375	450
Ajax-Grieb Rubber Co., preferred	101	110
Firestone Tire & Rubber Co., common	700	725
Firestone Tire & Rubber Co., preferred	112	..
Fisk Rubber Co., common	122½	125
Fisk Rubber Co., 1st preferred	106½	108½
Fisk Rubber Co., 2nd preferred	123	..
The B. F. Goodrich Co., common	71	72
The B. F. Goodrich Co., preferred	111½	113
Goodyear Tire & Rubber Co., common	338	342
Goodyear Tire & Rubber Co., preferred	111	112½
Kelly-Springfield Tire Co., common	298	300
Kelly-Springfield Tire Co., 1st preferred, new	93	96
Kelly-Springfield Tire Co., 2nd preferred, new	75	76
Miller Rubber Co., common	248	250
Miller Rubber Co., preferred	109	111
Portage Rubber Co., common	65	75
Portage Rubber Co., preferred	98	100
Rubber Goods Manufacturing Co., preferred	..	..
Swinehart Tire & Rubber Co	..	90
United States Rubber Co., common	53¾	55
United States Rubber Co., preferred	107	108¼

*And accrued divs.

EARNINGS OF THE UNITED STATES RUBBER CO. LESS THAN IN 1914.

Owing to the increased cost of raw materials—which in the case of tires alone averages 10 per cent. higher than a year ago—the earnings of the United States Rubber Co. are not expected to be as large this year as in 1914, according to a statement recently made by Colonel Samuel P. Colt, president of the corporation. The company is now turning out, at its various plants, upwards of 8,000 automobile tires daily, and it is expected that the output will reach between 13,000 and 14,000 tires before very long.

The company's footwear business is holding its own.

Colonel Colt stated that a small quantity of rubber is coming in from the plantations owned and cultivated by the company in Sumatra. While the quantity coming in will increase from year to year, the plantations are not expected to furnish any considerable share of the rubber required by the company until 1921. If, as the colonel anticipates, this rubber, equal in quality to the grade now selling on the market at 60 cents, can be brought here at a cost of 25 cents per pound, the Sumatra plantations will be an asset of no small importance to the company.

NEW PRICES FOR AMERICAN PROCESS ZINC OXIDE.

The New Jersey Zinc Co., New York, recently announced to the trade that American process "Horsehead" zinc oxide will be sold under a semi-annual contract and the clauses relating to protection and cancellation will be omitted. Deliveries will be limited to a maximum of 20 per cent. monthly, and will be spread as nearly as possible over the period of contract in regular monthly quantities. Where more than one grade is used, a definite quantity of each is to be specified.

Sales of the "Florence" brand, French process zinc will be confined to the first quarter of the year 1916. Contracts will be written separately and such tonnage will not be included in making up the 50-ton base of other grades. Where more than one grade is used a definite quantity of each is to be specified.

The following prices are for contracts covering the periods above mentioned, deliveries to begin January 1. They are based on shipments in barrels, f. o. b. shipping point, with freight allowance on carload lots. When shipped in paper bags of 50 pounds net weight, in carload lots, the price will be one-eighth of a cent a pound less than that given for "Special" and "XX Red." Quotations are subject to change without notice.

AMERICAN PROCESS "HORSEHEAD" BRAND.

	50-Ton Base.	Carloads.	Less Carloads.
Special *per pound*	$0.09¼	$0.09¼	$0.09⅜
XX Red	.08⅜	.08¾	.08⅞

FRENCH PROCESS "FLORENCE" BRAND.

White Seal		.17	.17⅛
Green Seal		.16½	.16⅝
Red Seal		.16	.16⅛

A SURREPTITIOUS SHIPMENT OF RUBBER ON THE ZEALANDIA.

The protest entered by the captain of the American steamer *Zealandia* against the exercise by the British cruiser *Isis* of the right of visit and search, on the ground that his vessel was at anchor within the three-mile limit from the coast of Mexico, has resulted in some interesting disclosures. It appears that the British consul-general in New York learned that 500 tons of rubber had been purchased for consignment to Malmo, Sweden, to the order of the German government. That it had been shipped from New York to New Orleans, thence to Progreso, Mexico, where it was to be loaded on the *Zealandia*. In the meantime, the British government, informed of these facts, had sent orders to the captain of the *Iris* to search the *Zealandia*, and the rubber was found in the cargo of rosin, hides, etc., she had loaded for Malmo, Sweden.

PRESIDENT J. NEWTON GUNN.

COLONEL SAMUEL P. COLT has always possessed the rare faculty of selecting lieutenants specially fitted to assist him in the administration of the great corporation of which he is the head. Now, to the able trio, Messrs. Sawyer, Williams and Price, all "right hand men," he has added as a fourth the well-known production engineer, J. Newton Gunn.

Mr. Gunn was born in Springfield, Ohio, in 1867. His boyhood and youth were spent in that charming middle western city, and the beginnings of his education were in its excellent public schools. After graduation there, he took special courses in the sciences, mathematics and languages, under private tutors. His first essay at business was with the Library Bureau of Boston, where he developed the use of commercial card indexes and invented the tab system.

J. NEWTON GUNN.

As lecturer on industrial organization at Harvard College he was the first to define the field of industrial and production engineering. Indeed, he was the creator not only of the name "production engineer," but of the profession itself.

In 1901 Mr. Gunn organized the firm of Gunn & Richards, production engineers and certified public accountants, which afterwards became a corporation, and as its president was brought in contact with many of the great industrial organizations of the United States and Canada. In 1895 he was so impressed with certain organization features abroad that he spent 12 months on the continent studying industrial conditions. On his return to the United States, his services were at once in demand. He surrounded himself with able assistants, capable of handling the ordinary problems of accounting and efficiency, but in later years arranged his own work so that he could devote his entire time to one corporation. To do this he sometimes stood in the background and planned, and at other times took over the management in person and staid with it until the business was placed upon a sound, systematic, producing basis. Such a case as this was his administration of the affairs of the great Studebaker Corporation. After the amalgamation of the Studebaker Brothers Manufacturing Co. and the Everitt-Metzger-Flanders Co., he became general manager for two years, and systematized the great business on an efficiency basis.

The fact that Mr. Gunn had so brilliantly proved the value, or rather the necessity, for the production engineer in modern industry, brought him first to the attention of the officials of the United States Rubber Co. Negotiations, begun early last summer, finally resulted in the election of Mr. Gunn to the presidency of the United States Tire Co., and also to the office of assistant to the president of the United States Rubber Co.

For both of these positions Mr. Gunn is singularly fitted. A tireless worker, he never shows signs of hurry, worry or irritation. His desk is always clear, and most of his work is "done the day before."

In spite of his busy life, Mr. Gunn has time for club and social affiliations. For years he was one of the directors of the Lotos Club, New York; he is a fellow of the American Association of Public Accountants, a member of innumerable clubs, such as the Engineers, Midday (New York), etc. His home in the winter is in New York, and in the summer at his country seat, Braemore, Litchfield, Connecticut.

Charles R. Keiser, formerly connected with The B. F. Goodrich, McGraw Tire & Rubber, and Gordon Rubber companies, has accepted the position of factory superintendent of the Double Fabric Tire & Rubber Co., at Auburn, Indiana.

PERSONAL MENTION.

Van H. Cartmell, president of the Kelly-Springfield Tire Co., returned on November 8 from an extended tour of the Pacific Coast, in the course of which he visited the Exposition and also every prominent agent of his company from San Diego to Vancouver.

J. T. Rose, formerly vice-president of the Atlanta Steel Co., Atlanta, Georgia, has recently been elected president of the Midgley Tire & Rubber Co., Lancaster, Ohio.

W. V. Logan has joined the McGraw Tire & Rubber Co., East Palestine, Ohio, as assistant sales manager. Mr. Logan has been identified for many years with the tire business, and recently returned from a trip to Russia on behalf of one of the large tire companies.

H. D. Palmer has been appointed New York State representative of the Knight Tire & Rubber Co., Canton, Ohio, succeeding E. J. Coniff, who has resigned.

M. S. Azulay, formerly a salesman for the Derby Rubber Co., Derby, Connecticut, and more recently manager of the Nearpara Rubber Co., Trenton, New Jersey, has been engaged by the Akron Tire Co., Inc., New York, to represent them in the Southern States.

E. S. Williams, president of the United States Tire Co., has resigned and will devote his exclusive attention to the mechanical rubber business of the United States Rubber Co. J. Newton Gunn, assistant to Colonel Samuel P. Colt, president of the United States Rubber Co., has been made head of the tire company.

Frank Waldo, of the firm of E. M. & F. Waldo, is on an extended business trip through the Middle West and Pacific Coast. Mr. Waldo is chairman of the membership committee of the National Paint, Oil & Varnish Association, and while at the Coast he worked for that committee, as well as attending to business matters for his firm, and also visited the San Francisco and San Diego expositions. He is now returning by way of Tacoma, Portland, Seattle, Minneapolis and Chicago, and expects to arrive in New York about Christmas-time.

Raymond G. Wells, who formerly specialized as an expert on electrical installation for the rubber trade for the Westinghouse Electric Co., has resigned his position and accepted one with the Alexander Hamilton Institute of New York. Mr. Wells' present effort is in the line of securing students for the reading course on business, which is now being used by ambitious young rubber men.

The retirement is announced of W. C. Hendrie, as manager of the W. C. Hendrie Rubber Co., Torrance, California. R. Ahrens is his successor. The retirement of W. F. Hackett, the company's superintendent, who is succeeded by E. W. Snyder, is also announced.

G. B. Withers, a pioneer planter of *Hevea* in British Guiana, who is located at "The Hills" Estate, Bartica, some forty miles up the Essequibo River, was a recent visitor to New York.

Charles A. Besam, formerly of the Knight Tire & Rubber Co., Canton, Ohio, has recently acquired control of the Quality Rubber Co., Hartsville, Ohio.

NEW TIRE LINER.

From Cleveland, Ohio, comes another addition to the innumerable inventions for prolonging the life of pneumatic tires. The new tire life-saver consists of a heavy rubber inner tire or liner encasing three resilient spring steel ribbons that protect the tread and side walls of the casing. The extra thickness of this liner tire is overcome by using smaller inner tubes and inflating at less than normal pressure. [National Pneumatic Safety Inner Tube Co., Cleveland, Ohio.]

JOSEPH W. WORK.

IT is a safe wager that a very large percentage of the rubber footwear men of the world would recognize the accompanying portrait as that of "Joe" Work. His familiarity with the industry, or at least one branch of it, footwear, has brought him in touch with practically every manufacturer in that line, and has thus broadened out his acquaintance to many in other branches of the rubber trade.

JOSEPH W. WORK.

Joseph W. Work was born in Newburyport, Massachusetts, May 20, 1852. The family is of the old Presbyterian, North of Ireland type, the head of the family landing on the Isle of Shoals, off the New Hampshire coast, in the early colonial days, and later settling in Newburyport. His grandfather was town clerk there before it became a city, and was also sexton and clerk of the historical Old South Church. It was then his duty to call or "cry" the marriage banns on three successive Sundays before a marriage could be solemnized.

Mr. Work received his education in the schools of his native city, and then secured a minor position in the old Mechanics' Bank there. Later he went to the Maverick Bank in Boston, where for several years he held the position of cashier, which he retained until the institution closed in 1892. For six months thereafter he was associated with the receiver of the bank. Then, as he expresses it, he drifted into the last business.

Through the advice of E. A. Saunders, at that time prominent in the management of the United States Rubber Co., he formed the Middlesex Last Co., and purchased a last manufacturing plant. As manager of that concern he built up a most successful business, producing lasts for rubber and leather shoe manufacturers.

For years Mr. Work lived up to his name, and built up a fine business, which he controlled until this year, when, the opportunity presenting itself, he sold out to Taylor & Lander. But, even with the change of ownership, he still has charge of those customers who manufacture rubber footwear, though relinquishing the leather shoe end.

Mr. Work has acquired every degree in Masonry, and has filled nearly every chair in the various bodies. He is treasurer of six Masonic bodies, and also holds the same office in the Mystic Shrine. He was treasurer of the entertainment committee at the triennial meeting and election of officers of Northern Jurisdiction of the Supreme Council in Boston last September.

Mr. Work is past president of the Point Shirley Club, and as a member of the house committee has several times placed the clubhouse at the disposal of the New England Rubber Club and its successor, the Rubber Club of America, Inc., on the occasions of their summer outings. The banquets held there by the rubber fraternity have never been excelled by those at outings held elsewhere. At all of them Mr. Work has been in evidence as a courteous, genial host.

SON OF DR. WATTS IN NEW YORK.

Charles T. Watts, son of Dr. Francis Watts, C.M.G., D. Sc., F.I.C., F.C.S., head of the Imperial Department of Agriculture for the West Indies, is now in New York. Mr. Watts has been connected with the various experiment stations in the West Indian Islands, notably at Dominica and Jamaica, and did much in experimental rubber planting.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A firm in Portugal desires samples and price lists of golden sulphide of antimony, pigments, etc. Report No. 18,866.

A business man in Norway wishes to communicate with American manufacturers or exporters of vulcanized (stranded) cable. Report No. 18,899.

An English firm desires quotations on cheap fountain pens. Report No. 18,934.

A New Zealand firm wishes to act as agent for the sale of chewing gum. Report No. 18,938.

A commission agent in Spain desires samples, catalogs, price lists, etc., of American rubber overshoes. Report No. 18,946.

An American consular officer in an insular possession states that there is a market in his district for automobile tires. Report No. 18,990.

A firm in South America, which has a ton or more of block balata to dispose of weekly, seeks buyers. Report No. 19,007.

A firm in India desires to be put in touch with American manufacturers of rubber stamp making materials. Report No. 19,014.

A Norwegian firm wishes to communicate with American dealers in suspenders, elastic for hats, and other articles. Report No. 19,015.

A Swiss firm wishes to represent an American manufacturer of garters. Report No. 19,033.

A business man in Holland would like to establish connections with manufacturers of elastic cord, rubber pharmaceutical goods, and wearing apparel. Report No. 19,077.

A representative of large plantations in the Dutch East Indies is in the market for machinery for preparing crude rubber for the market. Report No. 19,177.

A man in Spain desires catalogs, samples, prices and terms for combs made of ebonite. Report No. 19,249.

A Spanish company desires to communicate with manufacturers of automobile tires. Report No. 19,252.

A firm in Switzerland would like to establish commercial relations with American manufacturers of rubber balls used as toys. Report No. 19,253.

A firm in Italy desires to correspond with manufacturers of erasers and other stationery articles. Report No. 19,279.

A business man in Spain wishes to be placed in communication with manufacturers of corset materials and equipment, elastic webbing, rubber for garters, etc. Report No. 19,296.

RUBBER TRADE INQUIRIES.

[137.] An inquirer wants to buy toy balloons and toy balloon whistles.

[138.] A subscriber wishes to be put in touch with a maker of aprons used on compound mixing mills.

[139.] A dealer in rubber goods desires names of manufacturers of metal shut-offs for fountain syringes.

[140.] An inquiry has been received for the name of a manufacturer of tumbling barrels.

[141.] A correspondent desires the name and address of a manufacturer of vulcanized fiber in sheets and rods.

[142.] A buyer wishes to be put in touch with makers of India rubber rain overcoatings, in piece goods, not finished coats.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

TRADE NEWS NOTES.

The Paint Grinders' Convention, held in Cleveland, Ohio, during the week ending November 13, was attended by a number of manufacturers and distributors of compounding ingredients used in rubber manufacture. Among them was R. W. Evans, of the Picher Lead Co., with factories at Joplin, Missouri, and offices in the Tacoma Building, Chicago, Illinois.

A 60 x 200 feet addition, of tile and concrete, is being built for the J. P. Devine Co., Buffalo, New York, manufacturers of vacuum drying apparatus.

A unique enterprise is being conducted by the Samson Co., Philadelphia, Pennsylvania. Rubber bands are made in special sizes and weights adapted for the particular uses stipulated by the customer. This business, less than a year old, has shown considerable progress and indicates the possibilities of even the humble rubber band.

The Electric Hose & Rubber Co., Wilmington, Delaware, which has been in a continuous state of expansion for the past ten years, is erecting a building 30 x 225 feet, to be used as a storehouse for raw material.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, has secured the services of Dr. W. H. Coon, of Haverhill Massachusetts, as medical inspector in charge of the welfare work in their factories.

The Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio, is putting up an addition to its plant to accommodate two 10-ton cranes.

The Buffalo Foundry & Machine Co., Buffalo, New York, has opened a New York office at 1432 Whitehall Building, Battery Place, this city. The company manufactures the "Buflovak" apparatus, which includes vacuum dryer, of all types for drying all sorts of materials; dry vacuum pumps; condensers; vacuum drying and impregnating apparatus, etc. They also make complete plants and apparatus for the manufacture of aniline, phenol, beta-naphthol, picric acid, caustic soda, and acids. They do a general jobbing, foundry and machine business, and can quote on castings up to 200 tons weight each, including all necessary foundry and machine work.

The I. T. S. Rubber Co., Elyria, Ohio, is putting out a rubber heel, said to be designed by a practical shoemaker. It is claimed that this heel solves the problem of tight joints without cementing. It may be nailed on any leather heel regardless of shape, and the back pressure on the edge insures a tight joint.

The Clement Restein Co., Philadelphia, Pennsylvania, changed its name on September 28 to the Belmont Packing & Rubber Co., the personnel of the company remaining as before.

On October 12, patent No. 1,156,523 was granted to the Davol Rubber Co., Providence, Rhode Island, for the "Rest Easy," non-slip Bed Cushion, described on page 268 of the February, 1915, issue of THE INDIA RUBBER WORLD.

The St. Mungo Manufacturing Co. of America, makers of golf balls, now occupies new quarters at 121-123 Sylvan avenue, Newark, New Jersey.

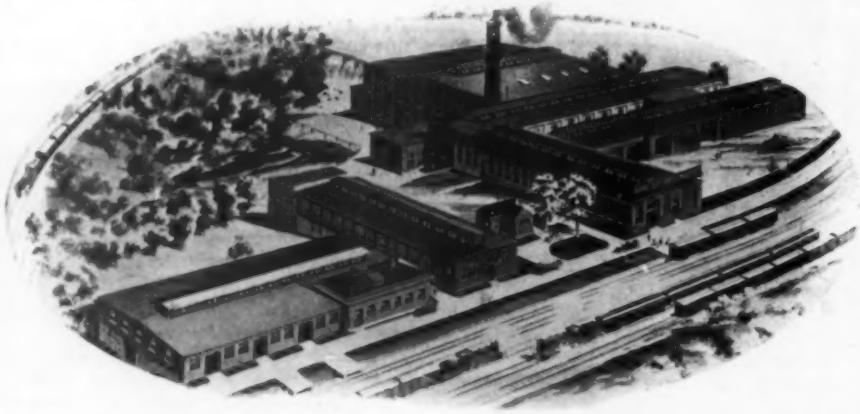
The Quaker City Rubber Co., Philadelphia, Pennsylvania, has recently arranged to have the John O. Flautt Carriage Co., of Memphis, Tennessee, act as its representative in selling tires and rubber accessories in Memphis.

BUILDING AIRSHIPS AT NAUGATUCK.

The first of the proposed fleet of dirigibles for the United States is now under way and the important order for the balloon fabric has been awarded to the United States Rubber Co. The work of constructing the fabric, which requires much skill and care in manufacturing, the success of the airship depending largely on the strength and capacity of the envelope, is now in progress at the India Rubber Glove Manufacturing Co.'s plant at Naugatuck, Connecticut.

The airship is being built by the Connecticut Aircraft Co., New Haven, Connecticut, under the supervision of Captain T. S. Baldwin, who supervised the building of the first German dirigible, and also the only dirigible ever owned by the United States Army.

The enormous envelope will have a tremendous lifting capacity and a new and improved shape, which by test has been proved to offer a minimum wind resistance. The airship, when completed, will be shipped to Florida, where it will be tested.



MONATIQUOT RUBBER WORKS CO.'S PLANT AT SOUTH BRAINTREE, MASSACHUSETTS.

MONATIQUOT RUBBER WORKS CO. CONSOLIDATE OFFICES.

The Boston offices of the Monatiquot Rubber Works Co. have been consolidated with the general offices of the company at South Braintree, Massachusetts. This move eliminates the duplication of records which were necessary before and makes for better efficiency throughout. All of the company officials are now located at the factory office building, which has been altered and improved to take care of the additional offices.

TWIN-CITY COMPANY ENLARGES.

The Twin-City Cord Tire Co., Inc., whose incorporation was mentioned in the November issue of THE INDIA RUBBER WORLD, has main offices in the Plymouth Building, Minneapolis, Minnesota, and branch sales offices in St. Paul and Duluth, Minnesota. We are advised that the company has decided to reorganize as a national company, with a probable capitalization of $2,000,000. A site is being considered for a new plant in St. Paul, which covers about 30 acres and has, at the present time, suitable buildings on it with 100,000 square feet of ground floor space.

NO REASON TO FEAR A "DUMPING" OF FOREIGN GOLF BALLS.

A. G. Spalding & Bros., of New York, call attention to the expiration next April of the Haskell patent on golf balls, and confidently announce that they will be fully prepared to meet all competition, whether from manufacturers in this country or in England. Further, as they put it: "The Dimple marking is patented and we shall most assuredly protect our rights in it."

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

MR. BOURNE AND BY-PRODUCTS UTILIZATION.

Word comes from Chicago that Lyman M. Bourne is now associated with the By-Products Realization Co. as vice-president. Mr. Bourne has been active in the rubber industry ever since his graduation from the Massachusetts Institute of Technology in 1904.

LYMAN M. BOURNE.

His first position was as research assistant in the laboratory of the late Dr. Carl Otto Weber, where he remained until Dr. Weber's death. He then entered the employ of the Revere Rubber Co. in their Chelsea plant, as chief chemist, and remained in this work until called to Brooklyn, New York, as superintendent of the Eastern Reclaimed Rubber Co. In 1909, he went with the Goodyear Tire & Rubber Co., where he held the position of chief chemist and department manager. In 1914 he became general manager of the Double Fabric Tire Co. at Auburn, Indiana, but resigned that position to accept the vice-presidency of the By-Products Realization Co., Chicago, Illinois.

Mr. Bourne's rubber experience is wide and his acquaintance with the trade is very large. His energy and efforts in his new connection will be applied, as he states it, in the prevention and utilization of by-products and waste material.

BRAZILIAN TARIFF ON TIRES.

Information received by the State Department, Washington, D. C., from the Hon. Edwin V. Morgan, American Ambassador at Rio de Janeiro, is to the effect that American interests are asking the Brazilian Government to fix the duty on automobile tires at 2 milreis per kilo [.147 cent a pound] with a preferential reduction of 20 per cent. on tires manufactured in the United States. Ambassador Morgan is supporting this proposition, which, of course, would be of advantage to tire manufacturers in the United States. He also states that the provision of the law last year, known as the "Fine Parà" law, will probably be reconsidered by the present session of the Brazilian Congress.

NEW INCORPORATIONS, WITH AUTHORIZED CAPITAL, ETC., 1915.

American Tire Company of West New York, New Jersey, October 29 (New Jersey), $100,000. William Kahn, August Kahn, Otto Schumann, 577 Fifteenth street; John Berger, Alphonse Thourot, 522 Bergenline avenue, West New York, New Jersey. Office, 601-607 Fifteenth street, West New York, New Jersey. To manufacture rubber tires for automobiles, etc.

Blair Shoe Company, Inc., November 6 (New York), $3,000. Max Darvas, 62 Smith street; Louis Blair, Jacob Blair, 214 Clinton street, Brooklyn, New York. Shoes and rubbers.

Emanuel Tietz and James Milaw, Inc., November 6 (New York), $5,000. Jacob E. Schoenfeld, Esther Schoenfeld, Herman A. Schoenfeld, 605 West 115th street, New York City. Rubber drug sundries.

Eureka Tire Co., November 4 (New Jersey), $50,000. Alexander Budson, Norman T. Rogers, Malcolm G. Buchanan, Trenton, New Jersey. Office, 26 West State street, Trenton, New Jersey. To manufacture and deal in tires, tubes, etc.

Lake Ruth Manufacturing Co., Inc., The, November 5 (New York), $20,000. Dr. Joseph D. Denelsbech, Trenton, New Jersey; Charles Gedney, Mercerville, New Jersey; Charles Londoner, 258 Broadway, New York City. Rubber specialties.

Lyall & Co., Inc., W. H., November 22 (New York), $50,000. Chester V. Lyall, Fidel Bigler, H. B. Vosburgh, Poughkeepsie, New York. Auto and tire business.

McNaull Tire Co., The, November 10 (Ohio), $2,500,000. W. D. McNaull, M. W. McNaull, A. H. Emerson, A. C. Wanamaker, Gustav A. Strub. To manufacture tires and rubber goods, etc.

Mason Tire & Rubber Co., October 19 (Ohio), $250,000. D. M. Mason, M. B. Mason, Robert G. Berlekemp, W. E. Sexton, O. M. Mason. Office, Cleveland, Ohio. To manufacture auto tires and rubber supplies. This corporation was listed by mistake in the November issue as the Marion Tire & Rubber Co.

New Castle Rubber Co., of New York, Inc., The, October 15 (New York), $5,000. Richard S. Ireland (president), Alexander T. Coutts (secretary and treasurer), Ella P. Edelstein, 237 Fifth street; Max Rosenfeld, 890 Beck street; H. J. Kearns, 52 West 65th street, New York. Office, 1662 Broadway, New York City. To deal in the "New Castle" and "Lehigh" tires.

News Manufacturing Co., Inc., November 5 (New York), $5,000. Joseph Oxenberg, 261 Broadway; Hyman Mates, 141 Stanton street; H. David Frackman, 148 West 111th street, New York City. Rubber and gum business.

Penn Rubber Co., William, November 4 (Pennsylvania), $5,000. E. E. Gallup, Herbert Patterson, Wilkinsburg; Robert E. Bradburn, Pittsburgh, Pennsylvania. Office, Penn Station, Pennsylvania. To manufacture and deal in tires and tubing, etc.

Pittsburgh Tire & Accessories Co., November 9 (Delaware), $10,000. J. J. McGeary, Berch and Hilf streets, Mt. Lebanon; J. F. McNaul, 822 N. Euclid avenue; G. E. Evans, 197 Watson Boulevard, Pittsburgh, Pennsylvania. To deal in automobile tires, tubes and accessories.

Republic Tire Company of New Jersey, October 1 (New Jersey), $125,000. James W. Pettit (president), 58 Amherst street, East Orange; Marcel R. Clodio (vice-president), 77 Bleecker street, Newark; Harold H. Wilcox (treasurer and secretary), 8 West Overroad, Montclair, New Jersey. To deal in automobile shoes and tubes.

Rubber Insulated Metals Corporation of New Jersey, November 13 (New Jersey), $100,000. Charles P. L. Huston, 15 East 40th street; William E. Conley, 52 William street, New York City; J. Stuart Eakin, Englewood, New Jersey. Office, 902 North avenue, Plainfield, New Jersey. Its objects are the electrochemical and metallurgical preparation of surfaces, metallic and otherwise, for the chemical attachment of india rubber and its compounds, and the attachment of india rubber and its compounds to any and all such surfaces, etc.

Stowe Rubber Co., September 24 (California), $20,000. William J. Stowe, Ada F. Stowe, Perry W. Stowe, Los Angeles, California. To deal in automobile supplies, rubber fabric, etc.

Tire Company of Rochester, Inc., November 4 (New York), $10,000. Milton Gladstone, 1774 Madison avenue; Joseph J. Jacobs, 2010 Seventh avenue, New York City; William Reisfeld, 830 Fox street, Bronx, New York. Auto tires, supplies, etc.

United States Rainproof Manufacturing Co., Inc., November 11 (New York), $10,000. Benjamin Katz, 27 East 10th street; Jacob Singer, 690 East 158th street; Morris Weshkoff, 986 St. Johns avenue, New York City. To manufacture raincoats, etc.

U. S. Wheel & Tire Co., September 15 (Illinois), $300,000. E. S. Gleasman (president), S. D. Ross (secretary), Rockton, Illinois. Office, Bridge street, Rockton, Illinois. To manufacture and deal in automobile tires, etc.

TRADE NOTES.

The United States Tire Co., according to President Samuel P. Colt, is bringing out a new "non-skid" tire, to be known as "Union Tread," at a price not much higher than plain tread tires. With the well-known "Chain" and "Nobby Tread" types, the company's line of tires is now complete.

The newspapers have of late bristled with the news that some $80,000 worth of pneumatic tires had been stolen to keep them from being shipped to the Allies and used on motor trucks, etc., in the war zone. They also claimed that some of these tires were once the property of The B. F. Goodrich Co. From that company, however, comes this disclaimer: "So far as we know none of our tires were included in this theft." The fact that the size of the tires said to have been stolen was indicated in metric measures, would arouse suspicion if they were offered for sale in the United States. Several arrests are reported to have been made in connection with the theft.

At a meeting of the stockholders held at Toledo on November 15, the corporate name of the Toledo-Ford Tire Co., Findlay, Ohio, was changed to the Toledo-Findlay Tire & Rubber Co. This course was necessary owing to the objection of the Ford Motor Co. to the use of the word "Ford" in the original name. It was also agreed that the word "Ford" on other than Ford sizes was not desirable.

The Akron Tire Co., Inc., New York, informs us that its appeal from a decision of Judge Sulzberger in the Court of Equity, Philadelphia, Pennsylvania, enjoining the company, on application of the Akron Tire Co., Philadelphia, from using that title when doing business in Pennsylvania, as recorded in the September issue of THE INDIA RUBBER WORLD, has been sustained. The New York Company was able to furnish indisputable evidence of the transaction of a large amount of business in Pennsylvania for several years and the expenditure of considerable sums for advertising and other propaganda.

The Gordon Tire & Rubber Co., Canton, Ohio, has recently opened a branch in New York at 1737 Broadway, of which W. A. Young is manager.

The A. L. A. Tire Co. is reported to be erecting a 275 x 100 foot factory building in Flint, Michigan, where they contemplate starting manufacturing operations with a capacity of 200 tires daily. The company is capitalized at $500,000.

The Marion Tire & Rubber Co., Marion, Ohio, whose incorporation was mentioned in the October issue, has elected the following officers: W. W. Holverstott, president; Charles W. Fairbanks, vice-president; D. H. Lincoln, treasurer, and Wilbur Jacoby, secretary.

A convention of Firestone salesmen and representatives of Des Moines, Iowa, was recently held in that city to discuss trade matters. President H. S. Firestone, the speaker of the evening, stated a few reassuring facts in regard to the available supply of crude rubber. Other prominent members of the Akron organization who attended the convention were R. J. Firestone, sales manager; Edward Babcox, advertising manager; F. C. Blanchard, Henry Wallace, Henry Ingham and C. C. Carlton.

Trustees in Bankruptcy of the New York Commercial Co. have sent out a circular letter announcing that 627 shares of the 7 per cent., cumulative preferred stock of the Seamless Rubber Co., New Haven, Connecticut, are included in the assets of the bankrupt concern and asking for bids on all or any part of the shares. The bids (sealed) will be received up to 2 p. m., December 20, 1915, at the office of Hon. J. Townsend, Referee in Bankruptcy, at 45 Cedar street, New York, and must be accompanied by 10 per cent. of the amount in cash, or certified check.

The Victor Rubber Co., Springfield, Ohio, has increased its capital stock from $150,000 to $300,000 to finance its rapidly growing business. During the past year this company has added a complete line of pneumatic tires, tubes and motor truck tires. The plant is operating night and day, and enlargements are being considered which will more than double the present capacity.

American Rubber Co., Chicago, Illinois, has increased its capital stock from $10,000 to $15,000.

After January 1, 1916, the Mishawaka Woolen Manufacturing Co., Mishawaka, Indiana, will manufacture a full line of rubber boots and shoes, including light weight shoes not heretofore made by the company. For this purpose a building 400 x 100 feet and four stories high has been erected.

The estate of the late Isaac B. Kleinert, of the I. B. Kleinert Rubber Co., whose obituary appeared on page 421 of the May, 1913, issue of THE INDIA RUBBER WORLD, has recently been appraised at $1,811,209. Mr. Kleinert gave $174,736 to his widow and, in a codicil, $75,000 in Kleinert bonds. His daughters, Belle Sessler and Herminie Kleinert, each received $296,099, and to Henrietta K. Guinzberg and Leonie K. Guinzberg he left $266,805 each.

The Republic Rubber Co., Youngstown, Ohio, has taken a lease on a 4-story building to be erected at 806 North Broad street, Philadelphia, Pennsylvania. The new building will contain over 10,000 square feet of floor space—more than five times that of its present Philadelphia premises—and will be completed about January 1.

The Racine Rubber Co., Racine, Wisconsin, has begun a $75,000 three-story addition, 52 x 77 feet, to be used as a mill room and crude rubber storage. It will be finished February 1.

It is the intention of the Converse Rubber Shoe Co., Malden, Massachusetts, early in 1916, to increase the capacity of its mill from 8,000 to 15,000 pairs of shoes a day, in order to keep pace with the demand for its goods.

A NEW OHIO TIRE FACTORY.

The Mason Tire & Rubber Co., Cleveland, Ohio, recently incorporated, has offices at 1836 Euclid avenue, pending the selection of a location for the plant, which will be in the Cleveland-Akron district. The company plans to erect a building containing 30,000 square feet, to be finished in four months, and it is hoped that the factory will be in operation by April 1. A full line of strictly handmade tires and tubes of a 4,500-mile quality will be manufactured. The officers of the company are: O. M. Mason, president; W. E. Sexton, vice-president; M. B. Mason, treasurer; I. R. Davies, secretary; D. M. Mason, general manager. B. E. Frantz, a practical tire man, is superintendent.

NON-EXPLOSIVE NAPHTHA BENCH CAN.

A new "safety first" appliance is the McNutt floating valve naphtha bench can.

A floating valve rests on the naphtha or gasolene, as the case may be, and permits the operator to use either a light brush, a sponge, or a cloth where a small quantity is desired. The pressure upon the float automatically forces the naphtha up through a fine screen to the brush or sponge, the excess flowing back in the same manner when the pressure is released.

A lighted match may be dropped into the can and the vapor will burn slowly. It is immediately extinguished, however, by closing the top. There is absolutely no danger of an explosion, for the evaporation is but slight even when the top is open. [United Shoe Machinery Co., Boston, Massachusetts.]

THE RUBBER CLUB OF AMERICA, INC.

UNDER date of November 1, 1915, a circular letter was sent out by the Rubber Club addressed particularly to export departments, and calling renewed attention to the importance of a strict observance of the seventh paragraph of the guarantee, which reads as follows:

If we export any manufactured or partly manufactured goods to a destination outside of Europe, not being a British possession, we will, prior to or simultaneously with the shipment, give you particulars of the goods so shipped and their destination.

The fact that the Rubber Club had prepared and was supplying to rubber manufacturers a form of notification to the British consul of such shipments, is also referred to.

The circular then goes on to state that a number of firms are selling rubber goods to export houses in New York, without notifying the British consul of the fact, such goods finding their way to non-European countries other than British possessions.

To prevent this, which would practically amount to an evasion of the guarantee, it is pointed out that American manufacturers should report such sales to the British consul on the form provided, giving the name of the concern to whom the goods were shipped.

The fact that the continuation of the present arrangement with Great Britain depends on compliance with the spirit of the agreement is emphasized in the circular, which closes with a renewal of the offer to supply copies of the notification form.

In another letter, dated November 11, the Rubber Club informs rubber manufacturers of a ruling by the British Government, dated October 26, 1915, to the effect that samples of rubber goods having no real commercial value should be forwarded to neutral European countries by way of the United Kingdom, no license for sending such samples from the United Kingdom to the country of their final destination being necessary.

It is stated in the communication from the British Government, that if it can be shown that existing conditions impose any real hardships on those engaged in legitimate trade, the government will consider any arguments on the subject.

MECHANICAL RUBBER GOODS MANUFACTURERS' MEETING.

The annual meeting and dinner of the Mechanical Rubber Goods Manufacturers' Division of The Rubber Club of America, Inc., was held November 3, 1915, at the Union League Club, New York.

The meeting was a social and business success and many important matters were discussed by the members in session. The guest of the evening was W. F. Bowers, of the Bowers Rubber Works, San Francisco, California. Those present were President William T. Cole, Fabric Fire Hose Co., New York; Vice-President John J. Voorhees, Voorhees Rubber Manufacturing Co., Jersey City, New Jersey; George E. Hall, Boston Woven Hose & Rubber Co., Cambridgeport, Massachusetts; Howard E. Raymond, The B. F. Goodrich Co., New York; J. S. Broughton, United & Globe Rubber Manufacturing Cos., Trenton, New Jersey; Henry Spadone, Gutta Percha & Rubber Manufacturing Co., New York; A. Boyd Cornell, Empire Rubber & Tire Co., Trenton, New Jersey; A. H. Elder, Boston Belting Co., Boston, Massachusetts; J. A. Lambert, Acme Rubber Manufacturing Co., Trenton, New Jersey; C. D. Garretson, Electric Hose & Rubber Co., Wilmington, Delaware; Charles E. Stokes, Home Rubber Co., Trenton, New Jersey; Edgar H. Wilson, Hamilton Rubber Manufacturing Co., Trenton, New Jersey; John J. Voorhees, Jr., and F. D. Voorhees, Voorhees Rubber Manufacturing Co., Jersey City, New Jersey; George A. Wies, Eureka Fire Hose Manufacturing Co., New York; Alfred Whitehead, Whitehead Brothers Rubber Co., Trenton, New Jersey; C. Heitzman, Jr., and H. E. Smith, Peerless Rubber Manufacturing Co., New York; J. H. Cobb, New York Belting & Packing Co., New York; W. F. Bowers, Bowers Rubber Works, San Francisco, California; J. T. Moore, Quaker City Rubber Co., Philadelphia, Pennsylvania; Charles Hardin, Republic Rubber Co., Youngstown, Ohio; Henry F. Hering, New York Rubber Co., New York; Harry S. Vorhis, secretary of the Rubber Club of America, Inc.

MEETING OF EXECUTIVE COMMITTEE, RUBBER SUNDRIES DIVISION.

A meeting of the executive committee of the Rubber Sundries Manufacturers' Division of The Rubber Club of America, Inc., was held November 4, 1915. The members present were Chairman Russell Parker, Parker, Stearns & Co., Brooklyn, New York; Charles J. Davol, Davol Rubber Co., Providence, Rhode Island; George B. Hodgman, Hodgman Rubber Co., New York City; Frederick H. Jones, Tyer Rubber Co., Andover, Massachusetts; Edward E. Huber, Eberhard Faber, Brooklyn, New York.

ANNUAL MEETING OF THE RUBBER TRADE ASSOCIATION OF NEW YORK.

THE annual meeting of the Rubber Trade Association of New York was held at 82 Beaver street, New York, on Thursday, November 11, 1915, at 3 p. m. President W. E. Bruyn called the meeting to order, and Secretary E. Weber read the minutes of the last meeting. A board of directors was elected to serve during the year, consisting of William T. Baird, W. G. Ryckman and William E. Bruyn. The following amendments to the constitution and by-laws, providing for both active and associate memberships, dues and fees, were adopted:

ARTICLE I.

MEMBERSHIP.

SECTION I. Membership shall consist of active and associate members.

SECTION II. Any co-partnership, corporation or individual engaged in the business of crude rubber shall be eligible to active membership.

SECTION III. Any co-partnership, corporation or individual connected with the rubber industry shall be eligible to associate membership.

SECTION IV. Every member of the association shall conform to and be bound by the regulations and rules of the association for the time being in force, and shall on becoming such member sign these regulations and, on signature of the same, shall be deemed to have entered into a covenant and contract to that effect with each and every other member for the time being of the association, and with all firms, corporations or individuals becoming members thereafter.

SECTION V. Any co-partnership or corporation shall designate the member or officer who shall represent it in the association. Such member shall have the right to appoint another member of the co-partnership or corporation as his substitute, if not able to be present. Each individual co-partnership or corporation holding an active membership shall be entitled to one vote in the association.

ARTICLE IV.

MEMBERSHIP DUES AND FEES.

SECTION I. Initiation fee for active membership to the Association shall be $25.00.

Subdivision (*a*) The annual dues for active membership shall be $50.00.

Subdivision (*b*) The annual dues for associate membership shall be $25.00.

SECTION II. The annual dues shall be payable in advance on the first day of November.

SECTION III. All new members, immediately upon election, shall pay to the association the annual dues for the then current year.

SECTION IV. The initiation fee of active members shall be paid to the Treasurer within ten days after written notice has been

given a member-elect of his election, and in default of payment thereof, he shall be deemed to have declined membership.

SECTION V. Members failing to pay their annual dues within 30 days may be subject to suspension from the privileges of the association in the discretion of the Membership Committee.

The question of classifying and standardizing the various grades of crude rubber, and the necessity of a well-defined nomenclature that will be approved and recognized by the rubber trade, was fully discussed. A committee will be appointed at the next directors' meeting to further the project.

The following were present:

W. E. Bruyn, chairman, L. Littlejohn & Co.; Robert B. Baird, Rubber Trading Co.; F. Mullen, United Malaysian Rubber Co.; A. B. Beers, A. B. Beers; H. A. Gould, Gould Commercial Co.; E. Maurer, E. Maurer Co., Inc.; F. H. Peaty, F. H. Peaty; W. G. Ryckman, W. G. Ryckman; W. H. Stiles, W. H. Stiles; Karl Schroder, Karl Schroder; L. M. Byles, L. M. Byles; George E. Pell, Pell & Dumont; A. V. W. Tallman, A. V. W. Tallman; George Muller, Muller, Schall Co.; A. B. MacNamara, A. B. MacNamara Co., Inc.; F. G. Gove, Gove & French; F. R. Henderson, Henderson & Korn; C. T. Wilson, C. T. Wilson Co., Inc.; M. Calvet, Pablo, Calvet & Co.; R. L. Chipman, R. L. Chipman; H. De Lanie, Robinson & Co.; L. P. MacMichael, L. P. MacMichael; H. S. Hammesfahr, W. Hammesfahr & Co.; R. W. Earle, Earle Bros.; W. Weber, Rubber & Guayule Agency, Inc.

THE ASSOCIATED MANUFACTURERS OF ELECTRICAL SUPPLIES.

RECOGNIZING the necessity of active coöperation throughout the electrical manufacturers' industry, the manufacturers of electrical supplies appointed a committee to report on a plan for the organization, and, by its adoption, the Associated Manufacturers of Electrical Supplies was formally organized.

The objects of the organization, as stated in its constitution, are "to advance and protect the interests of the manufacturers of electrical supplies and of the materials entering into electrical construction, in manufacturing, engineering, safety and other problems, to promote the standardization of electrical material, to collect and disseminate information and to promote coöperation among the members."

Following the adoption of the plan of organization and constitution and by-laws submitted by the committee, the following officers were chosen:

President—R. K. Sheppard, Simplex Wire & Cable Co., Boston, Massachusetts.
Vice-President—H. B. Crouse, Crouse, Hinds & Co., Syracuse, New York.
Treasurer—J. W. Perry, H. W. Johns-Manville Co., New York.
General Secretary—Charles E. Dustin, 62 Cedar street, New York.

GOVERNORS.

A. W. Berresford, Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin.
Charles L. Blizard, Electric Storage Battery Co., Philadelphia, Pennsylvania.
Le Roy Clark, Safety Insulated Wire & Cable Co., New York.
H. B. Crouse, Crouse-Hinds Co., Syracuse, New York.
D. C. Durland, Sprague Electric Works, General Electric Co., New York.
J. J. Gibson, Westinghouse Electric & Manufacturing Co., Pittsburgh, Pennsylvania.
H. R. Holmes, R. Thomas & Sons Co., East Liverpool, Ohio.
J. F. Kerlin, National Carbon Co., Cleveland, Ohio.
J. W. Perry, H. W. Johns-Manville Co., New York.
W. C. Robinson, National Metal Moulding Co., Pittsburgh, Pennsylvania.
Walter Robbins, Wagner Electrical Manufacturing Co., St. Louis, Missouri.
B. E. Salisbury, Pass & Seymour, Inc., Solvay, New York.
R. K. Sheppard, Simplex Wire & Cable Co., Boston, Massachusetts.
Thomas M. Debevoise, Counsel, New York.

In the short time of its existence the association has formed three sections that are in active operation, with officers and committees as follows:

THE INTERIOR CONDUIT SECTION.

Chairman—F. C. Hodkinson, Safety Armorite Conduit Co.
Treasurer—D. H. Murphy, American Conduit & Manufacturing Co.
Secretary—Alexander Laughlin, Jr., Central Tube Co.
Executive Committee—F. C. Hodkinson, chairman; D. H. Murphy, Alexander Laughlin, Jr., C. E. Corrigan, Russell Dart, Oscar Hoppe, J. H. Trumbull.

SUB COMMITTEES.

Rigid Conduit Committee.
Non-Metallic Flexible Conduit Committee.
Metallic Flexible Conduit Committee.
Metal Molding Committee.

THE WIRE AND CABLE SECTION.

Chairman—W. A. Connor, Standard Underground Cable Co.
Secretary—W. S. Clark, General Electric Co.
Treasurer—Edward Sawyer, Atlantic Insulated Wire and Cable Co.
Executive Committee—W. A. Connor, chairman; F. J. Newburg, W. F. Field, Everett Morss, R. E. Lucas.

SUB COMMITTEES.

Industrial Conference Committee (to act with underwriters).
Committee on Special Specifications and Enquiries other than those of the Industrial Conference Committee.

The Rubber Covered Wire Engineers' Association, which has been 17 years in existence and has been active in the work of standardization, in coöperation with the Underwriters' Laboratories, has voted to transfer its activities to the Wire and Cable Section of the association.

Plans are being laid for five or more other sections, of which due notice will be given.

The Board of Governors will hold its next meeting on December 2, 1915, at 8 p. m., at the Hotel Biltmore, New York.

WIZARDS IN A GROUP.

Thomas A. Edison, the world's foremost inventive genius, Henry Ford, who builds automobiles for all the world, and Harvey S. Firestone, president of the Firestone Tire Co., Akron, Ohio—friends of long standing, who had been "doing" the San

A GROUP OF MODERN WIZARDS.

Francisco and San Diego fairs in company—met Luther Burbank, who does wonderful things with plants and fruits, at San Francisco, and were entertained by him at his experimental farm at Santa Rosa. The illustration of the group of "wizards" shows, left to right: Henry Ford, Thomas A. Edison, Luther Burbank, H. S. Firestone.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THERE is little let-up in the various lines of rubber goods production. All are busy; none below normal for this time of year and some finding more demand than capacity to supply. Among those in this latter condition the clothing trade is perhaps at the head of the list. The manufacturers of rubber coats and similar goods are so far behind their orders that they are rushing their working forces on overtime work as far as possible consistent with proper quality of the output. The makers of high-class coats are particularly busy. The makers of rubber footwear are busy on all lines, the only exception seeming to be in low felt overshoes, which have been growing in smaller demand for the last three or four seasons. This is more than balanced by an increased call for high arctics of the "emperor" variety. Tennis shoes are to be seen in all colors, plain and in combination, and with heels of all heights, even up to covered wooden heels with rubber "toplifts." There is a genuine boom in rubber soles—straight rubber and various composites and combinations—and rubber heels are in increasing demand. The hose business is quiet. There was less demand than usual for garden hose, and dealers have carried over pretty full stocks. Fire hose business is not heavy, but one or two makers of heavy vacuum hose have filled contracts. There is some increased call for rubber belting. Makers of molded goods and drug sundries are busy.

* * *

A new rubber factory is to be erected in Malden. The ground has already been broken preparatory to building. H. H. Kelley & Co., dealers in shoe findings and shoe store supplies of Boston, have taken title to several plots of ground at Maplewood station in Malden, which will be transferred to a new corporation about to be formed, under the name of the Malden Rubber Co. The new factory will be a two-story building, 125 x 40 feet, and is so planned that it can be added to and extended as the demand for their goods may warrant. L. H. Williams, who knows rubber manufacturing from one end to the other, both in Europe and here, will be the president of the new company and have charge of the manufacture of the product, which will be mechanical rubber goods and rubber soles and heels. Franklin P. Gowing, of the firm of H. H. Kelley & Co., will be the treasurer of the company. It is expected that the factory will be completed and in operation in January next.

* * *

The question of the legality of a franchise tax is to be tested by the bringing of a bill in equity in the United States Court, seeking to restrain the Tax Commissioner, the State Treasurer and the Attorney-General from collecting a franchise tax of $40,161.99 from the Boston Rubber Shoe Co., of Malden, Massachusetts. This bill alleges that the company, in 1914, paid a tax of $5,036.41, and that in March of the present year it received notice of an additional tax of $40,161.99, purporting to be a franchise tax. This, the company contends is illegal and unconstitutional. The rate of the franchise tax for 1915 is $18.55 per thousand dollars. This would make the assessed value of the stock of the Boston Rubber Shoe Co. about $2,112,000.

* * *

Speaking of taxes, it may be of passing interest to the many readers of THE INDIA RUBBER WORLD who knew Robert Dawson Evans, to learn that Mrs. Marie A. Evans, his widow, pays the largest individual tax in Beverly, Massachusetts, her bill this year being $83,589.92.

Mrs. Evans has made excellent use of her money in the way of public benefactions; the Evans Memorial Building being her gift to the Massachusetts Homeopathic Hospital, where are given weekly, during the winter, free public health lectures. In this beautiful building are housed the departments of clinical research and of preventive medicine. Another and finer gift, which has been pictured in this journal, is the Evans addition to the Museum of Fine Arts in this city—one of the noblest pieces of architecture to be found in New England. But this is not all. Last month the trustees of the Museum of Fine Arts announced a further gift of $50,000 from Mrs. Evans, to establish a memorial fund to the memory of her mother, Mrs. David Hunt. As Mrs. Hunt was interested in sculpture, Mrs. Evans has chosen that this fund shall be for the benefit of sculpture and modeling in the school of the museum. Part of the income of this fund is to be used for scholarships, to be awarded each year to promising students in sculpture. There will be two scholarships of $250 each, these awarded yearly, and a traveling scholarship of $1,200, awarded not oftener than once in three years, for a year of study in Europe by some gifted graduate of the school. The balance of the income is to be used toward paying the salary of the instructor in modeling.

* * *

The George P. Cox Last Co., of Malden, has been somewhat unfortunate of late. On October 1, one of its drying houses was burned. On November 17, another dry house met the same fate. Both were well filled with last blocks in the rough, which were being seasoned before being turned into lasts. The second fire destroyed 15,000 blocks, and the first nearly as many. Notwithstanding this loss, the manager of the plant states that there will be no interruption of the business, which will be carried on as usual, supplying lasts to the manufacturers of rubber boots and shoes. There were ten such dry houses on the premises, and thus it will be seen that while the loss was considerable, the company was but little inconvenienced by this double conflagration.

* * *

The Bemis Rubber Co.'s plant, situated on the Boston & Maine Railroad at Bemis, a section of Watertown, Massachusetts, has been sold to Everett C. Tarr of this city, and H. R. Berry of New York. From other sources it is reported that extensive alterations and improvements will be made, and that it will be occupied by the Pan-American Chicle Co.

The plant occupies a lot of over 80,000 square feet of area, with buildings covering 20,000 feet, all equipped with boilers, engines and rubber working machinery. There is a railroad siding along the premises, to accommodate six cars. The location is a desirable one, and the plant, with the improvements contemplated, will have a large capacity.

* * *

The Avon Sole Co., of Avon, Massachusetts, began, not so long ago, manufacturing a sole compounded of rubber and shredded leather. After the sole was just right it was exploited among the shoe manufacturing trade. The prices were high, higher than some others tending towards a similar combination; but having proved that they were worth the prices, the company held to them, and kept up the quality, consistently refusing to cheapen their product. The consequence is that they have had to double their capacity to supply the demand, and the new addition to their plant is just completed, a new power house being also added to furnish heat, light and power.

* * *

The J. H. Stedman Co., the well-known scrap rubber house, announces the removal of its Boston office to South Braintree, Massachusetts, where it will be joined with the general office in the commodious new quarters recently erected. In the future all buying and selling inquiries should be addressed to the South Braintree address.

* * *

Harry M. Gordon, who for 19 years has been identified with the White Co., even before it made motor cars, was tendered a testimonial dinner by his past and his future business associates at the Engineers' Club on the evening of November 13. Mr. Gordon was with The White Co. in the old bicycle days, when he traveled and established agencies all over New England, and managed

the retail store of that company in this city. When the company, following the trend of the times, began manufacturing automobiles, he did his share in the sales department, until 1905, when he became purchasing agent for the company.

On November 15 he assumed the management of the sales department of the Kelly-Springfield Tire Co. in this city. His many friends predict for him an assured success in his new position.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

FIRE of mysterious origin swept through one of the great wire rope shops of the John A. Roebling's Son's Co., November 15, resulting in a loss of about one million dollars. In addition to the damage sustained by the company, 29 houses in the vicinity of the shop were badly damaged. It is said that a large order of wire for one of the big tire companies was destroyed.

Rumors were rife that the blaze had been started by German agents on the supposition that material for the allied armies was in process of manufacture. The company denies that any war

PART OF THE PLANT OF JOHN A. ROEBLING'S SONS' CO., DESTROYED BY FIRE.

material was being turned out in the plant, and scouts the idea that a spy started the fire. They are, nevertheless, unable to account for the start of the conflagration.

The insulated wire department of the Roebling's, which was destroyed by a mysterious blaze some months ago, is about ready to begin operations in a building erected on the site of the old structure; and it is pointed out as significant that the second fire should have occurred just at this time. It was commonly reported that war supplies were being made in the insulated wire department at the time it was destroyed. The work of rebuilding the wire rope shop on the site of the old structure will be begun without delay.

* * *

The labor trouble which for a time threatened to tie up the plant of the Essex Rubber Co. has been adjusted and most of the old operatives are back at work. A United States commissioner visited Trenton and talked the matter over with the strikers, who then decided that the offers made to them by the Essex company two weeks before the strike was declared were perfectly satisfactory. At the time of the settlement of the trouble the company agreed to take back the old employees as rapidly as possible. Announcement was made, however, that none of the men who went to work in the places of the strikers would be dismissed to make room for the old employees. The strike is said to have actually been a benefit to the company, as it served to clear up, to the satisfaction of the men, many of the imaginary ills under which they had been convinced by outside labor agitators that they were working. Among other things, it was charged that the plant was unsanitary. An inspector from the State Department of Labor, on invitation of the factory officials, visited the plant, and after an extended inspection declared that conditions were highly satisfactory in every respect.

The Essex company report an extraordinary increase in the sale of rubber quoits during the past six months.

* * *

Several of the rubber manufacturers who maintain their own machine shops have been affected by a strike of the Machinists' Union, which is demanding an eight-hour day. The men are still out at some of the places, including the shops devoted exclusively to the making of rubber machinery. It is thought, however, that in a majority of cases a compromise will be speedily arrived at. The Mercer Automobile Co. and The United & Globe Rubber Manufacturing Cos. reached an agreement with their men, who promptly returned to their places.

* * *

The John E. Thropp's Sons' Co., manufacturer of presses, tire-making machinery, etc., has had plans drawn for an addition to complete its new machine shop, which will then be 65 x 325 feet, with a gallery on one side 23 feet wide. It is completing a power plant which will be equipped with two 300-hp. boilers, a 450-hp. engine, with a 250-kw. generator, steam pumps and one 750-foot air compressor, all of which have been contracted for.

* * *

The Royal Rubber Works, which has been operating in a small frame structure, is erecting a new brick and steel plant 50 x 150 feet, to take care of increased orders. About seventy-five people will be employed when the new plant opens. This concern manufactures druggists' sundries. In its new plant a specialty will be made of a particular type of ice bag. S. Reinhart, head of the company, told THE INDIA RUBBER WORLD correspondent that he visited several other cities before deciding where to erect the new plant and came to the conclusion that no other locality offered anywhere near the advantages of Trenton for the production of rubber goods.

* * *

The Lakeside Rubber Co., Messrs. McCue & Pierce, are building a larger boiler room and installing a boiler and engine of increased capacity.

* * *

A new addition is being erected at the plant of the Joseph Stokes Rubber Co., to help take care of their increased orders for hard rubber goods. The addition, as planned, will be 75 x 90 feet and two stories high. When it is completed the firm will give employment to about 100 additional hands.

* * *

The Lambertville Rubber Co. has about completed the erection of an addition to the factory costing several thousands of dollars. The product of this company appears to be steadily increasing in popularity and the outlook for the coming year is bright.

* * *

Charles L. Huston, of New York, has bought at receiver's sale the automobile tire manufacturing plant at Plainfield, of Leon Jaffress, bankrupt, for $23,300, in addition to a mortgage for $15,000.

* * *

The Ogren car, driven by Tom Alley in the 350-mile Astor Cup race, which finished fourth, was fully equipped with the Thermoid Rubber Co.'s Nassau tires. Not only did these tires require no change during the race, but at the finish they were in almost perfect condition—"good for another race," as Mr. Alley stated it.

Trenton's rubber industry was well represented at the recent annual convention of the Atlantic Deeper Waterways League, held in Savannah, Georgia. An exhibition of Trenton-made goods was held in the parlors of one of the hotels of Savannah. The display attracted much attention. While it was not intended that any trading should be done, a number of orders were actually booked. Included among the firms which maintained displays were: United & Globe Rubber Mfg. Cos., Woven Steel Hose & Rubber Co., Ajax-Grieb Rubber Co., Joseph Stokes Rubber Co., Empire Rubber & Tire Co., Acme Rubber Manufacturing Co., Thermoid Rubber Co., DeLion Rubber Co., Mecca Tire Co., Semple Rubber Co., L. M. Anderson Raincoat Co., and John A. Roebling's Sons' Co. It seemed a revelation to the people of Savannah to learn that so many products were made in the New Jersey capital, and considerable Southern trade may be influenced as a result. Secretary Salter, of the Trenton chamber of commerce, presided at the display, which was under the direction of Mayor Donnelly.

Among the delegates named by Mayor Donnelly to represent Trenton at this convention were: George F. Eberhard, Empire Rubber & Tire Co.; C. H. Oakley, Essex Rubber Co., and representatives from the Hamilton Rubber Manufacturing Co. and the John E. Thropp's Sons' Co.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THERE is continued and consistent activity in the rubber industry throughout the State, every line being unusually busy, and with little prospect for any slack period during the next six months, at least. Orders are reported as being plentiful and the majority of available workers are employed in one or another of the different plants. In fact, the number of calls in the daily newspapers for persons to learn the work in the various branches have become noticeable by their frequency. Some of the concerns are said to be at the limit of their present facilities and have been forced to refuse additional orders. In this connection the concerns are delaying the erection of additional buildings until the present status and future conditions of business indicate exactly what may be expected.

* * *

It is reported that at the Narragansett Rubber Co., Bristol, where 450 hands are engaged in making rubber shoes and tennis footwear, a number of orders have recently been turned away because the company, which is represented solely by Terrence McCarthy, is not able to take over any additional contracts at present. After the installation of a new vulcanizing plant, the shoe output was increased fifty cases daily.

* * *

A number of additions and improvements are being made at the plant of the National India Rubber Co., Bristol, upon which a large force of men are at work. An addition of considerable size is being placed on the east end of the calendering department building, and ground was broken a few days ago for an addition to the north boiler room. The paper box and printing departments are also to be enlarged and to receive additional equipment.

The unusually large amount of business that is being done at present at the National's factory and the large quantities of rubber shoes to be made, to fill future orders, necessitates the material enlargement of several of the departments, and in order to do this new buildings, or additions to present structures, must be erected. It is reported that orders for tennis shoes alone, that will require several months to fill, have already been received. At the present time there are about 3,200 persons employed at the plant.

It is planned by the National Co.'s officials to equip the watchmen, both day and night, with uniforms, and to have night watchmen to patrol the streets and squares in the vicinity of the company's plant.

The Revere Rubber Co. has just completed the installation in its plant on Valley street, Providence, of one of the largest Boland patented sand-blast machines made by the manufacturers, for use to sand-blast automobile steel truck rims. Before the solid rubber tire is put on the rim every particle of rust must be removed, and this is done by sand-blasting. The new machine is double. Each part is fitted with a revolving spool, on which the different sized rims are placed, and as the rim revolves, the sand is forced against the face of the rim.

The blower that furnishes the air blast is a four-cylinder Boland patented positive pressure, which discharges seven hundred cubic feet of air per minute. It occupies a floor space of 24 by 76 inches, the weight of the machine being 5,000 pounds and the speed 150 revolutions per minute. A 10-hp. motor is used to operate the blower and sand-blast. This new machine is dustless and self-contained. The operator simply places the rim to be sand-blasted on the revolving spool, closes the door, and the operation proceeds.

* * *

The International Rubber Co., Barrington, is defendant in a damage suit for $25,000 filed recently in the Superior Court for Providence County by lessees of oyster beds. Another corporation in Barrington is sued in similar proceedings. Eddie B. Blount and Mary E. Blount, of Warren, Rhode Island, are the plaintiffs in the cases. They claim that refuse from one or both of the corporations named flowed across the oyster beds and destroyed the shell fish during a period of five years, causing great damage.

* * *

The Washburn Wire Co. is preparing to erect an addition to its plant at Phillipsdale, which will be 81 x 86 feet on the ground and 31 feet in height.

* * *

The George C. Moore Co., Westerly, has been incorporated under the laws of Rhode Island to manufacture elastic webs, with a capitalization of $100,000. The incorporators are George C. Moore, Eleanor C. Moore, Emma C. Moore, Thomas F. Moore and John V. Moore.

* * *

Edward M. Guild, widely known throughout New England, left his home at Bristol, on the evening of November 9, for New York, on his way to San Francisco. He sailed November 20, on the "Shinyo Maru," for Sumatra, where he will enter the employ of the General Rubber Co. at its great rubber plantations.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE outlook for the rubber factories is as bright as a new dime. But a dime is a poor simile—they're dealing in dollars, followed by a pleasing array of plump and prosperous zeros. The war, of course, has added its quota to sales, but there is a large and growing demand for rubber products that have nothing to do with war requirements. The growth in the domestic sales of automobiles is notable, and rubber factories look forward to an exceptional spurt in this industry next year—which of course means more tires. Price cutting in automobiles has gone to great extremes, but it is reported that tires will not follow suit by any further reduction than that made at the beginning of 1915, any change in price being in the opposite direction. Increase in the cost of fabric and crude rubber has been lessening tire profits for the last half of the year.

* * *

The B. F. Goodrich Co. is erecting a new machine shop, and additional machinery has been ordered. Although the present

capacity of the plant is over 14,000 tires a day, the directors intend bringing it up to 20,000.

Goodrich common dividends will not be declared before the January meeting, in order that the result of the full year's operations may be considered.

The Goodrich company is now using a black tread on all tires. This tread has been used on "Silvertowns" for the past two years and proved highly satisfactory. It also gives a distinctive appearance to the car.

The pension plan adopted by the Goodrich company is deservedly popular among the employees, one of whom was recently given absolutely free life and accident insurance and a retirement pension proposition.

At the Taisho Exposition in the island of Nippon during the past year, all the Japanese manufacturers, and also the companies doing a considerable business in Japan, exhibited their products. For the excellence of its display of safety treads, wireless truck tires, belts, packing, etc., the Goodrich company has received a gold medal.

* * *

In addition to the five buildings begun last spring and now nearing completion, the Firestone Tire & Rubber Co. has placed contracts for floor space amounting to nearly three acres. When the latest additions are completed, the total floor space of the Firestone plant will be over 31 acres. A new storage and warehouse is being added, and two other factory buildings.

The clubhouse for employees built by the Firestone company is rapidly being completed. A tunnel will be constructed, leading from the plant to the clubhouse, to prevent the crowding and congestion among the employees at the noon and evening hours.

* * *

The fiscal year of the Goodyear Tire & Rubber Co. ended October 31, with gross receipts of over $36,000,000. This is $5,000,000 in excess of the total of last year and $11,000,000 over that of 1913. Over 2,000,000 tires were made during the year, and the present rate of production nearly doubles that amount.

The forthcoming report of the Goodyear company, it is predicted, will show earnings of more than 40 per cent. on the common stock.

A new 7-story addition to the Goodyear plant is being constructed, at a cost of $125,000.

Following a tire mileage investigation among Goodyear users, 1,000 tires were found that averaged a mileage of 9,974 miles. The Goodyear company displayed the investigated tires in the windows of its various branches, each tire being tagged with the name of the owner, the size of the tire, and the number of miles service it had given.

Over 100 couples attended the Goodyear dance given by the social committee of the company on November 18, the Goodyear orchestra playing the entire evening. These dances are to be a regular feature, and another will be held in three weeks' time.

* * *

The Kelly-Springfield Tire Co., which prides itself upon making only a high-priced automobile tire, is turning out 1,500 a day, keeping its factory constantly going on a 24-hour schedule. The company is in the truck tire field, also, and expects to make 400 truck tires daily after January 1.

* * *

At the annual meeting of the Miller Rubber Co. on November 11, a quarterly dividend of 3 per cent. was declared, increasing the common stock dividend from 10 to 12 per cent. President Jacob Pfeiffer reported that sales for the year ending June 30, 1915, were $25,000,000—an increase of 30 per cent. After paying 7 per cent. on $400,000 preferred stock and 10 per cent. on $1,000,000 common, the company added $303,243 to surplus, making a total reserve of $832,000. In one year the Miller company has increased its floor space from 6½ to 21½ acres. One of the new buildings, containing 98,358 square feet, will be ready for operation by January 1.

The Aluminum Flake Co. is building a new factory on its property at Barberton, which will give three times the present capacity. The company still maintains offices in the Ohio Building at Akron.

The Portage Rubber Co. is adding to its plant at Barberton, and will increase its tire capacity to about 800 tires per day.

The General Rubber Manufacturing Co., whose incorporation was mentioned on page 78 of the November issue of THE INDIA RUBBER WORLD, has offices in the Ohio Building, with a factory in East Akron. The company will manufacture automobile accessories.

The Adamson Machine Co. is putting up a 160 x 80 foot addition to its steel foundry for a 10-ton open hearth furnace, to make open hearth steel castings.

* * *

Bertram G. Work, president of The B. F. Goodrich Co., has purchased 30 acres of land at Oyster Bay, Long Island, where he plans to build a summer home.

At the dinner given on November 15 at the Portage Club by President George Bates of the chamber of commerce, F. A. Seiberling, president of the Goodyear Rubber Co. and a director in the national chamber, spoke on the work of the latter organization.

As chairman of the Community Christmas Committee, Mr. Seiberling presided at a committee meeting in the chamber of commerce rooms on November 17 which was attended by 30 representatives of Akron public organizations, for the purpose of deciding upon plans for the holiday entertainment. It is planned to abandon the idea of having one large Christmas tree, as was done last year, and, instead, to hang illuminated electric stars at downtown street intersections as a reminder of the Christmas spirit.

"Johnny Y.," a 5-gaited saddle horse that has won many blue ribbons and is worth thousands of dollars, has recently become the property of Mr. Seiberling.

Roy G. Harris, of the Firestone Tire & Rubber Co., returned recently from an extended stay in Russia, where he has been selling tires.

* * *

The rubber companies, especially those manufacturing tires, will exhibit at the second annual automobile show to be held in the Akron Winter Garden, December 11 to 18.

Many of our rubber men are planning to attend the annual banquet of the Rubber Club of America, Inc., in New York, on January 28.

The police department is considering installing tandem cars in place of the motor cycle now used for pursuing the wrongdoer. The tandem cars can carry two policemen, one sitting behind the other. The frame of the car is formed like that of an automobile and is mounted on four light wheels. These cars were introduced into this country from England. It is said they are capable of making 80 miles an hour.

CHICAGO RUBBER NOTES.

The Illinois Rubber Co., whose incorporation was mentioned on page 26 of THE INDIA RUBBER WORLD for October, is located at 214-216 W. Kinzie street, and is making a general line of mechanical rubber goods.

The Chicago Mold & Machine Co., 970 Montana street, is making a general line of molds and cores for mechanical rubber goods and tires. They are specializing in a pad mold for making composition, canvas, or leather backs for horse shoe pads.

The Dutch Guiana Culture Co., of which L. C. Lawton is president, with offices in the Lytton Building, recently shipped 12,000 glass rubber latex cups to the company's plantation in Dutch Guiana. The cups were made by the United States Glass Co., Pittsburgh, Pennsylvania.

The Williams-Bowman Co., formerly of 171 N. Greene street, is now located in its new plant at 1947 S. Fifty-fourth avenue. This company makes molded plumbers' specialties.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

RUBBER AND THE BUDGET, ETC.

THE effect of the Excess Profit Tax of 50 per cent on the various rubber plantation companies is the only matter in connection with the rubber interest which is being actively and acrimoniously discussed. It certainly does not seem fair that a small company which has made an increased profit of a thousand or two should have to pay up while an older one, which has made large profits at about the same figure for the previous three years should pay nothing. The suggestion that all rubber companies should pay a tax of 20 per cent. or so has been proposed as being much more equitable and as likely to bring in a larger sum. If this proposal is not accepted it would only be on the ground that other industries would probably claim the same sort of thing and necessitate an extensive alteration in the whole scope of the tax.

Turning to another topic, it is noteworthy that although our army has increased in the last year and is still increasing, supplies and equipment are well in hand and there is an absence of the rush and get-things-anywhere spirit noticeable a year ago. Practically all rubber goods, including hospital requirements, can now be bought by the public at ordinary prices. This applies to army clothing, some contracts for which were placed in America a year ago, and to all equipment, it is understood, except rubber thigh boots. An order for 70,000 pairs of these was placed in the United States during the last few months and this only because it was impossible to obtain the required number in British and Canadian factories. The labor question has not been acutely felt so far in our rubber works, because in normal times women are always largely employed. Now, however, with Lord Derby's recruiting scheme in operation, it is inevitable that some deficiency and dislocation will be manifest, and we may expect that women will invade departments to which they have been strangers hitherto.

Reverting for a moment to the Excess Profit Tax, two important concessions by the Chancellor of the Exchequer may be mentioned: first, the average of two years' profits in place of three may be taken as the datum line; second, new plantation companies just emerging from the development stage are to be compensated for past losses by the allowance of a high datum line varying with the length of development period.

The recent advance in price of plantation rubber is due to steady buying by manufacturers fearful of being found short. Some little nervousness no doubt exists in certain quarters as to the maintenance of the open waterway from the East, in view of the recent development of the war, but apart from this there certainly seems only two good reasons to apprehend a further rise in freight, and also shipping delays. The details of the new government control of merchant shipping are not yet announced, but it may be taken for granted that the present increased requisition of shipping by the allied governments will lead to further delay and expense in obtaining goods from the Far East. On a former occasion I referred to the regulations specially drawn up by the Manchester Chamber of Commerce to guide the authorities with regard to the exportation of cotton cloth suitable for aeroplane use. Now, however, it is announced that special permits relating to this class of goods will not be operative, and that all applications for the export of cotton goods will be dealt with by the War Trade Committee in London. An agitation is on foot for the establishment of a branch office of this committee in Manchester, as being conducive to saving of time and the interests generally, of the important cotton trade.

LAWN TENNIS BALLS.

The feature of the past season was, as might have been expected, the dearth of tournament and match play, and the consequent small demand for balls, and at the present time there seems little likelihood of a happier state of affairs for next year. Although the well-known brands of balls were on the market, there were numerous complaints that the quality of some of them was not up to the accustomed standard, though the prices were unaltered. Complaints, it is said, met with no response or sympathy, which presumably may be attributed to the small amount of business doing. It is the purveyors of luxuries who have been the hardest hit by the war and, among such, sport-outfitters are prominent. I hear that dealers have been advised of a rise of 1*s.* per dozen balls for next season, owing to the advance in price of materials and labor. The ordinary ball has the felt or melton cover sewn on after the rubber ball is completely finished, and in the case of best quality balls I have not heard of any complaints arising from this procedure. In a recent patent of E. C. Wisden-Luff and John Wisden & Co., Limited, sport-outfitters, the cover is put on with rubber cement and the vulcanization of the ball is afterward effected, or if previously semi-vulcanized, it is then completed. Among other claims for this ball I note that it is said to be less porous and will consequently last longer. If this claim is substantiated in practice, the patent should prove of more value than many patented improvements in rubber manufacture.

The obituary notice in the October issue of THE INDIA RUBBER WORLD of Mr. A. G. Spalding has been read with interest by many, who, though familiar with the sports depots of Spalding Bros. in London and the provinces, knew nothing of the rise and development of the firm. The Spalding make of lawn tennis balls is well known, though it has not yet been officially adopted by the Wimbledon authorities.

RUBBER CHEMICALS.

There has been a considerable rise in solvent naphtha, which has gone from 10*d.* per gallon to 2*s.* 4*d.* The makers say that this is entirely due to the large demand from the rubber works, which seems rather surprising, because the proofers are by no means so rushed with work as they were a year ago, when solvent was at a much lower level. It is a significant fact that the rise in solvent naphtha has synchronized with the withdrawal of benzol from the open market, the whole supplies of this commodity now having been requisitioned by the War Office in connection with a certain development in the manufacture of explosives. Solvent naphtha, which should consist of xylol, but has, according to the state of the market in the past, often contained benzol and toluol, is now exclusively xylol and is not in demand for the manufacture of explosives, and only to a limited extent for the coal tar color industry. But it can be used for certain purposes instead of its lighter homologues mentioned above. These other uses, as well as a reduction in the output, have no doubt had an effect upon the price. With regard to solvent naphtha the future will depend somewhat upon how much Scotch shale spirit is available, this solvent being largely used in Scotland. That lower prices are not in prospect, however, is evidenced from the

fact that contracts for the supply of solvent naphtha over 1916 have been entered into at the price of 2*s.* 2*d.* per gallon.

The exportation of aniline, hitherto permitted under license, is now entirely prohibited. The price has soared up to 2*s.* 6*d.* per pound, a fact which I may say is not due to any increased demand, but because of decreased production, owing to the non-availability of benzol, from which it is made.

Another chemical used by rubber manufacturers and reclaimers which has advanced considerably in price, is caustic soda. The British production has been in demand by neutral countries formerly supplied from Germany, and this, coupled with a good home demand, has led to a shortage. A good deal has been coming from America despite the rise in freight from 12*s.* 6*d.* to £3 per ton, and has been sold here at prices varying from £20 to £27 per ton for 74 to 76 per cent. c. i. f. Liverpool. In the case of several chemicals, of which there is a shortage for one reason or another, market quotations must not be read to literally, as urgent wants in individual cases have had to be met, with the result that varying prices have been recorded in a limited period of time.

Sulphur, which up to recently has been exported by permit, cannot now be exported at all, a matter which affects some of our rubber chemical manufacturers.

Zinc oxide at 9*d.* per pound is now a luxury and it has not experienced the fall in price shown by the metal.

Litharge is another compounding ingredient which has risen in price, and altogether it will be seen that the rubber manufacturer who is buying now and not getting deliveries of naphtha and other requirements under contracts made some time ago, has a good deal to worry him. Similarly, those who are still supplying naphtha and other chemicals which have risen, under contracts made a year ago, are not unnaturally grumbling at the position in which they find themselves.

In these strenuous times, one never knows what the next week may bring forth with regard to the disposition of chemical products, the needs of the state, rather than of the individual, having necessarily to be satisfied first. I am not going to enlarge upon this somewhat cryptic utterance except by saying that it is not altogether improbable that difficulty may be experienced in getting supplies of certain chemicals, unless they are required for government contract.

AFRICAN WORLD AND RED CROSS FETE.

A. Staines Manders and Miss D. Fulton, whose organizing ability the rubber trade knows and appreciates, are preparing to hold, in London, a "Cape to Cairo Fair and Red Cross Fête". This is in the line of special work they have been doing, free, since the great war began. The fair will be a direct and very effective aid to the "African World and Red Cross Work" which, since August, 1914, has done a great deal for Red Cross and hospital work in England, Belgium, France, Russia, Italy, Egypt, etc. The "African World Work" is under the patronage of the Queen of the Belgians and the honorary president is Mrs. Louis Botha, of Pretoria. The fair will be held at the Great Central Hall, Westminster, London, December 15, 16 and 17. It will, in a word, be "Africa in London" and a wonderful collection of native works and curios from nearly every country in Africa will be on exhibition. There will also be a series of special lectures and moving picture films covering such industries as gold and diamond mining, ostrich feather farming, etc., etc.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

"UNDER GOVERNMENT CONTROL."

The influence of the war on British manufacturing industries capable of executing war orders, and the activity of the Hon. David Lloyd George, Great Britain's Minister of Munitions, in making such establishments subservient to campaign requirements, is revealed in recent communications received at this office from well-known British rubber manufacturing concerns. The following legends were conspicuously displayed on their stationery: "Under Government Control," "Controlled Establishment Under Munitions of War Act 1915," "This Establishment Is Controlled Under Munitions of War Act 1915."

RUBBER REGENERATING CO., LIMITED, FURNISHES AMBULANCE.

A very practical charity, particularly at the present time, is the war ambulance. The illustration shows a modern ambulance furnished and operated by the Rubber Regenerating Co., Limited, Manchester, England. This particular ambulance, by the way, is not only non-sectarian, but it is international in its charities.

AMBULANCE DONATED BY RUBBER REGENERATING CO., LTD.

"ARTIFICIAL RUBBER" IN ENGLISH TIRES.

Rubberine, Limited, London, England, the manufacturers of "Rubberine," a special tire filler, advise THE INDIA RUBBER WORLD that nearly one-half of their product of late has been taken by the government for filling the tires of armored cars, lorries, kitchen cars, and ambulances. An interesting point is that pneumatic tires returned from the front for refilling, although riddled with shrapnel bullets, had served their purpose until the car had gotten safely back to its base.

Dr. Joseph L. Torrey, of the Northwestern Rubber Co., Limited, of Liverpool, England, was a recent visitor to the United States. E. E. Buckleton, the president of the company, usually makes the annual American trip, but as he is suffering from an accident, not serious, happily, Dr. Torrey took his place.

Bertram G. Work, president of The B. F. Goodrich Co., sailed the latter part of November for London. It is understood that he plans a brief absence only.

Hard rubber goods when exposed to sunlight a considerable length of time, turn gray, due to the action of sunlight on the rubber compound. This can easily be remedied. The shop-worn hard rubber article is first freed of dust and then washed with ammonia, after which it is well rinsed in pure cold water, thoroughly dried and finally polished with whiting and a soft cloth. It is important that no hot water be used, for the heat would cause the hard rubber article to warp and lose its shape.

The French Rubber Situation.

By Our Regular Correspondent.

HERE in France, news and information circulate more by word of mouth than through publication channels, and for this reason it is no easy matter to give a complete review of conditions, as one cannot ask too many questions or make too extensive inquiries without raising uncomfortable suspicion. The whole country is heart and soul in the war and commercial as well as industrial conditions, though secondary, are improving daily.

When the order to mobilize came, a year ago last August, all able-bodied men, regardless of rank or occupation, were called to arms from factories and commercial institutions. This state of affairs continued until after the battle of the Marne, when the situation was mastered and steps taken to repair past mistakes.

We had an army for defensive purposes only, and a new one had to be created. That done, we started reorganizing and adapting ourselves to new conditions. Technical experts and skilled labor were released from the armies and put to work in the factories. Attention was first given to factories working for the essential needs of our defenders. Heavy artillery was created, railroad lines constructed, the production of ammunition organized, the aviation corps provided not only with great numbers of new machines, but also with new types of planes and motors, and our motor transportation service increased and perfected.

INNER TUBE DEPARTMENT IN FRENCH FACTORY.

Like other industries, the rubber industry was paralyzed by the mobilization. But rubber is essential to modern warfare, and so our rubber factories were soon reorganized and set to work again with skilled labor and technical management, as were also the munitions factories which, by the way, like our most important rubber factories, are in Central France and the Paris district well behind the "front."

The leading branch in our rubber industry has always been the manufacture of tires, and of all rubber articles, tires are the most important in modern warfare. Soldiers now ride in motor cars, and motor cars and trucks keep them supplied with food and munitions. Motor tractors draw the big guns that are constantly changing positions and motor trucks supply these monsters of destruction with ammunition. These motors all use tires, either solid or pneumatic, but always rubber. For this our factories were well prepared and as soon as the needed labor and staffs returned from the army, work went on night and day, so smoothly and effectively that our factories supply all our rubber needs and are now able to extend their trade in the Orient, in South America and in Africa. Our rubber factories are now abundantly provided with skilled workmen and technical experts. They are not only producing tires, but also all the rubber sundries and surgical goods required by our army and navy medical service. The only branch somewhat curtailed is the mechanical, and this is because the Germans still occupy the most important market for mechanical rubber goods in Northern France.

As a rubber manufacturing district, the Northern departments were never as important as those of the Paris district or of the central part of this country, but they were our largest consumers of manufactured rubber. The mines of the Nord and of the Pas-de-Calais produced at least two-thirds of our total output of coal. Our spinning industry was in Lille, our linen industry in Armentières, Lille and St. Quentin, our cloth and woolen industries were in Roubaix and Tourcoing. Enormous furnaces, rolling mills, steel works, electrical and mechanical construction works, glass works, etc., were scattered along the Belgian frontier throughout the districts now occupied by our enemies. These districts were second only to the Paris district in industrial wealth, while agriculturally they were the richest in France. All these industries were great purchasers of mechanical rubber goods; likewise the great distilleries, breweries, sugar factories and other industries of Northern France.

The fine pleasure cars as well as the ponderous trucks that traversed the northern "pavés"—the cobble-paved roads of Northern France—all used rubber tires, and their number was exceeded only by those of the Paris district. This once beautiful and wealthy part of our country is closed to us now, but we hope to have it back before many months.

Although the invaded provinces were not great producers of rubber goods, it may be of interest to your readers to know that there were about 50 plants in these districts engaged in the manufacture of rubber goods and the production of chemicals, ingredients, accessories and machinery used in the manufacture of rubber and gutta percha. The following are some of the leading concerns:

SOFT AND HARD RUBBER GOODS.

Bans, Lhomme, Nord; Gustave Boinet & Cie., St. Quentin, Nord; E. Degrave, Roubaix, Nord; Butrulle & Masquelier, Tourmignies, Nord; Usines du Coq Français, Roubaix, Nord; Destriez & Cie., Pont-à-Marcq, Nord; Michel Jackson, Halluin, Nord; Lefebvre, Pont-à-Marcq, Nord; Mazure, Roubaix, Nord; F. Montreux & Tyberghien, Halluin, Nord; Volber Vailley, Aisne; Flinois, Colmant & Cuvelier, Lille, Nord; Dedale-Rivelois, Roubaix, Nord, and Colonial Rubber Co., Thiant, Nord.

CHEMICALS AND COMPOUNDING INGREDIENTS.

Société Anonyme des Mines de Malfidano, Noyelles-Godault, P. D. C. (chalk); Gortschalk, St. Amand-les-Eaux, Nord (chalk); Société Française La Baryte de Commines, Commines, Nord (barytes); Lufbery & Chardonnier, Chauny, Aisne (rub-

ber substitute); Madame J. Lefrant & Cie., Ham, Somme (chemicals).

RUBBERIZED GARMENTS.

G. Boinet & Cie., St. Quentin, Aisne; Coustoux, Roubaix, Nord.

TIRES.

Durandal, Lécluse, Nord (pneumatic); Lecerf, Péronne, Somme (pneumatic); Vittu, Lille-St. Maurice, Nord (pneumatic); Colonial Rubber Co., Thiant, Nord (pneumatic); Lecoutre, St. Quentin, Aisne (solid rubber tires).

NON-SKID TREADS, TIRE STUDS, ETC.

Dutrieux & Cie., Le Quesnoy, Nord; Place & Meurisse, Lille-St. Maurice, Nord; Vittu, Lille-St. Maurice, Nord; Colonial Rubber Co., Thiant, Nord; Le Vulcain, Péronne, Somme.

TIRE FABRICS.

Coisne & Lambert, Armentières, Nord; Destriez & Cie., Pont-à-Marcq, Nord; Dutilleul, Armentières, Nord; Laroche & Lechat, Lille, Nord; Legault, Armentières, Nord; Trèves, St. Quentin, Aisne.

RUBBER WORKING MACHINERY.

A. Questroy & Fils, Lille, Nord; Delattre & Cie., Ferrière-la-Grande, Nord.

Belgium and the districts now invaded furnished practically all the cotton, linen, hemp and jute fabrics used by our rubber manufacturers, and under present conditions we are obliged to import these from America and Great Britain. We are also importing large quantities of compounding ingredients from your country. In this connection I wish to inform you that much of these commodities that figure in your statistics as exports to England are re-shipped to France.

IMPORTS OF CRUDE RUBBER.

France has always been, comparatively speaking, a large user of Brazilian rubber, and most of this was imported through Havre; but now Havre is no longer in direct communication with South America and our direct imports of Brazilian rubber have almost totally ceased. The following comparative statistics will give you a fair idea of our crude rubber market as it now stands.

	Imports During the First Five Months of		
From—	1913.	1914.	1915.
Brazil ..... *pounds*	5,369,980	3,133,900	264,440
Great Britain	6,191,900	9,005,920	7,318,300
French Congo	263,560	223,520	99,660
Senegal	212,960	2,420	16,940
Other colonies (French).....	2,757,700	1,255,760	985,820
British Indies	535,920	1,639,440	241,780
Other countries	7,029,880	5,181,660	1,221,000
Total	22,361,900	20,442,620	10,147,940

If you compare the first two lines of these statistics you will note that the large decrease in Brazilian imports is compensated by a substantial increase in our imports from England. I believe much Brazilian rubber reaches us via English ports. The fact that Para rubber now passes through England before reaching this country has increased its cost to us by at least 5 cents a pound, and our importers are now endeavoring to obtain the re-establishment of direct communication between France and Brazil.

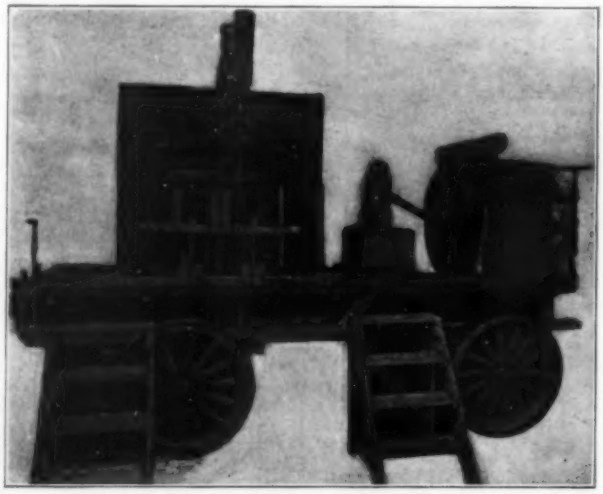
Although the war has somewhat increased the cost of raw materials, there has been no radical increase in the prices of rubber goods here. Tires, hose, belting, packing, rubberized garments, etc., can all be had at normal prices.

There have been reports of gasolene shortage and, in fact, prices have increased. But the real cause is the difficulty in securing exchange, and the rubber industry has not been affected. There is no reason for alarm, for all our gasolene comes from America, which in normal times furnished as high as four-fifths of our requirements for this commodity.

Many trade papers have ceased, or at least curtailed the scope of their publications, but the old-established papers are still going strong, among these your contemporary, "Le Caoutchouc et la Gutta Percha," which, although obliged to delay publication at first, has recovered wonderfully. The October issue of our only rubber paper contained 67 advertisements, of which 9 were British, 3 American, 1 Dutch, 3 Swiss, 1 Spanish and 1 from a firm in the invaded territory. This compares very favorably with the average of this paper previous to the war, when of 146 advertisements published, 22 were German, 1 Austrian, 5 Belgian, 2 Dutch, 5 American, 15 British, 2 Swiss, 1 Italian, 1 Russian, and 15 from French territory now invaded.

Our government has prohibited the exportation of the following commodities of interest to rubber and gutta percha manufacturers:

Rubber, balata, gutta percha, whether crude, reclaimed or in



HYDRAULIC PRESS MOUNTED ON TRAILER TRUCK.

the shape of waste, including hard rubber scraps; amyl, methyl, and ethyl alcohols; pitch tar rosin, turpentine; cotton and cotton waste; copper ore, pure metal or alloys; sulphuric and acetic ether; insulated wire and cables; mineral oils, crude or refined; benzine, benzol, toluene, etc.; fabrics suitable for making balloons; motor vehicles and pneumatic tires. Sulphur, copper, motor vehicles and rubber tires can be exported under special license to America, Great Britain, her colonies and possessions; to the French Colonies, Japan, Montenegro, Russia, Servia and to that part of Belgium still held by the gallant Belgian army.

The poisonous gas used by the Germans, which at first worked such havoc, has now been minimized by anti-gas helmets, impermeable to chlorine gas, made of light rubberized fabrics, closed at the throat by a draw string, and completely covering the wearer's head. Goggle-like mica plates afford vision to the wearer, who breathes through a perforated detachable cup containing a cloth saturated with a solution of hyposulphite and bicarbonate of soda, which react with chlorine and hold it in harmless combination.

It has been said that modern war is motor war, which is certainly very true. As I stated in the beginning of this letter, motor vehicles are indispensable and have greatly lessened the importance of railroads in military operations.

MOBILE REPAIR SHOPS.

The wastage of motor vehicles has been far less than many of your war correspondents would lead you to believe. Our armies are well equipped with means for making necessary repairs. Besides large permanent repair shops at the bases in the rear, we maintain flying repair stations immediately behind the battle lines. The mobility of these "parcs" is secured by mounting the machine tools on special trailer trucks coupled behind the travelling workshops which are arranged on large motor trucks. These flying repair shops are able to do all repairs, even those of the most complicated nature.

Tires, of course, are used up in enormous quantities. The heavy solid rubber tires, used on motor trucks, are mounted on steel detachable rims which are forced on the permanent rims of the

wheels by a hydraulic press. For this work we have designed self-contained hydraulic presses mounted on trailer trucks, and adjustable to any size solid rubber tire.

The war has greatly modified conditions in France, even to the remotest districts, but we have adapted ourselves to war conditions and it has become part of our every-day life. Confidence is general—no one doubts our final victory. Before the battle of the Marne we had little hope. Since that great success, however, confidence has returned, and although it is not manifested in a boisterous manner, it is firm in the hearts of our countrymen.

RUBBER TRADE IN JAPAN IN 1914.

By Our Regular Correspondent.

IN my contribution to the April issue of THE INDIA RUBBER WORLD I endeavored to give as complete statistics as possible of the rubber trade of this country during the calendar year 1914, but I will take up the subject again to give your readers more detailed information which I have obtained from statistics published recently by our Department of Finance and by the Customs authorities in Kobe.

Although no large rubber factories existed here during 1914, there were in operation quite a number of small plants, with the result that our consumption of crude rubber increased substantially in spite of war conditions and the incidental hindrance to commerce. The war embargo on rubber injuriously affected our rubber manufacturers. It stopped the supplies of crude rubber we were in the habit of obtaining from Singapore, until the latter part of October, when small quantities were obtained from the Straits Settlements port. The decrease in arrivals of crude rubber was soon felt by our manufacturers, for here in Japan it is not customary to speculate in crude rubber, especially when prices have a downward tendency. Purchases are made only as the material is needed; so that when the embargo came there were no large supplies of crude rubber on hand in this country.

Singapore being practically closed to us we endeavored to obtain crude rubber from Dutch India, only to find that the entire production there had been bought up by American interests. America and England were still open as sources of supply, but the distance and the high freight rates made purchases there impracticable. We did buy some crude rubber in England, but not in sufficient quantities to keep all factories going, and before the end of the year quite a number of our small rubber manufacturing concerns were obliged to close their plants. The larger factories were able to hold out until February and March of the present year when many of these were obliged to shut down because no crude rubber was available.

In former years we purchased much Borneo and British Indian wild rubber through the Singapore market, chiefly because our manufacturers were under the impression that wild rubber was better than the plantation product, but also because the former was cheaper. We now recognize that in the end plantation rubber is cheaper than the wild varieties because there is no loss in washing and refining, as there is with Borneo and British Indian rubber which come to us in a very impure state. Of course, the prices for plantation rubber are not as high as formerly, but the same applies to wild rubber and to South American and African grades. We have a good opinion here of African rubbers, but most of our manufacturers are not equipped to handle them advantageously. The following table shows the prices we paid for the most popular grades of crude rubber at different times during the year 1914:

	January and February.	July.	August and September.	November and December.
Borneo rubber....*per 100 pounds*	$52.50	.....	.....	$67.50
British Indian rubber.....	70.00	.....	.....	67.50
Plantation sheet	62.50	$57.50	$56.00	67.50
Fine Pará hard cure.....	75.00	.....	.....	105.00

Pale crêpe is the plantation type most used here, followed by smoked crêpe and scrap, in order of importance.

During the past year the following rubber factories were our principal consumers of crude rubber: The Yokohama Electric Wire Works, Limited, Yokohama; the Mitatsuchi Rubber Manufacturing Co., Tokio; the Toyo Rubber Co., Limited, Tokio; the Nipon Rubber Co., Limited, Tokio; the Fujikura Electric Wire & Rubber Co., Limited, Tokio; the Nipon Wire & Cable Co., Limited, Tokio; the Kakuichi Rubber Co., Osaka; the Osaka branch of the Yokohama Electric Wire Works, Limited, Osaka; the Sumitomo Rubber Works, Osaka; the Hirana Rubber Works, Osaka; the Mutsuda Rubber Works, Osaka; the Asai Rubber Works, Osaka; the Shimada Rubber Works, Osaka; the Asuma Leather Co., Osaka; the Bando Belt Co., Osaka; the Dunlop Rubber Co. (Far East), Limited, Kobe; the Naigai Rubber Co., Limited, Kobe; the Kawaji Rubber Co., Kobe; the Settsu Rubber Co., Limited, Nishinomiya and Hyogo; the Kamenofuchi Rubber Co., Fakae and Hyogo; the Kyushu Electric Wire Co., Limited, Fukuoka, and the Chugoku Rubber Works, Hiroshima. Of the total of our imports of crude rubber two-thirds were consumed in Osaka, Kobe and other western parts of Japan and the rest in Tokio and Yokohama.

During 1914 a new application for rubber was discovered here and now rubber solution is being used for coating the thongs of the wooden clogs which almost all Japanese wear when out of doors. The widespread use of wooden clogs and this application of rubber to them is bound to increase our consumption of crude rubber.

The Japanese Imperial Steel Works at Wakamatsu, Japan, have placed a contract with a British firm for the installation of a benzol plant with an annual output of 2,400 tons of benzol.

JAPANESE EXPORTS OF RUBBER GOODS.

The most important items of our exports of manufactured rubber goods are rubber insulated electric wires and jinrikisha and bicycle tires, which we ship in quantities to China, Kwangtung Province, Hong Kong, British India, the Straits Settlements, Dutch India, Great Britain and other countries. From the statistics I gave in my April contribution you will note that our exports in these articles increased more than 50 per cent. in 1914 as compared with the preceding year. The increase in these exports started in August, which goes to show that they were largely due to the stoppage of European shipments in these lines. By December the orders in hand were far in excess of our capacity to deliver; our output, as before said, being curtailed by the crude rubber embargo of our allies. Prices, however, were good and our manufacturers made substantial profits.

The following table shows weights and values of our exports of rubber goods through the leading ports of this country for 1914:

From—	Pounds.	Value.
Kobe	872,594	$536,970
Yokohama	6,930	4,214
Other ports	3,262	1,951
Total	882,786	$543,135

As will be noted, most of these exports were made through the port of Kobe. The following table shows the destinations of exports of rubber goods through this port for 1914:

From—	Pounds.	Value.
China	341,244	$199,823
Kwangtung Province	2,305	1,139
Hong Kong	2,913	1,345
British India	37,689	30,644
Straits Settlements	221,572	141,041
Netherlands India	250,223	158,327
Great Britain	5,758	3,805
Other countries	10,890	846
Total	872,594	$536,970

RUBBER PLANTATIONS.

Rubber plantations here promise well for the future. We now have some 88,000 acres under *Hevea*, which will produce about 5,000 tons of rubber per year when in full yield. Our present consumption of crude rubber amounts to about 2,000 tons per annum.

Rubber Planting Notes.

RUBBER AND INTERPLANTED COFFEE.

STATEMENTS that the growth and yield of *Hevea* trees were adversely affected by interplanting with coffee have in several instances induced Java planters to cut out the interplanted coffee. This not only meant the direct loss of the coffee—cost of original planting and cultivation and annual yield—but in many instances the rubber trees were injuriously affected. As a result of experiments conducted at the Besoeki Experiment Station, Djember, Java, Director A. J. Ulteé issues a circular in which he admits that the interplanted coffee apparently retards in some degree the growth of *Hevea* trees, according to the planting distance, the method of working employed and local circumstances. Also cutting out of the interplanted coffee often injuriously affects the rubber and before deciding upon this step planters should ascertain by careful experiment the probable effect the removal of the coffee would have on future rubber production.

RUBBER EXPORTS FROM UGANDA IN 1914-15.

The Department of Agriculture of the Uganda Protectorate has published its annual report, covering the year ending March 31, 1915. So far as rubber growing is concerned, the situation there is certainly not what it might be with proper attention and enterprise.

The report discloses that "all the rubbers are neglected with the exception of Para, and, although the area ready for tapping is comparatively small, the results obtained give every encouragement to persevere, as it is an excellent standby and costs comparatively little to bring into bearing when coffee is grown as a catch-crop."

Apparently there are no circumstances peculiar to the soil or climate tending to obstruct abundant and profitable growth, the state of the business being mainly due to neglect. The tabular statement at the end of the report bears this out so far as the wild rubber is concerned. In 1911, 898 hundredweight of wild rubber was exported and in 1914, the banner year, 123,984 pounds; while for the year ending March 31, 1915, none is recorded. On the other hand, plantation rubber amounting to but 552 pounds in 1911, has gained steadily, and by the latest figures, was exported during 1914-15 to a total of 22,056 pounds, valued at £1,838 ($8,944).

Of course Uganda has suffered by the past slump in the market, the harvest of 1913-14, amounting to 19,454 pounds of plantation rubber, bringing £2,934 ($14,278).

EFFECT OF TAPPING SYSTEMS ON RUBBER YIELD.

At a well-attended meeting of the Committee of Agricultural Experiments recently held at the Peradeniya Agricultural Experiment Station, Ceylon, L. E. Campbell, the rubber research chemist, explained the relation between the physiological effects of tapping on *Hevea* and the production of dry rubber; or, in other words, the connection between rubber yields and storage of reserve starch. Some of the trees under examination were tapped with the half-herringbone to left of the channel, over one-fourth of the tree's circumference. The first section of the tree, tapped continuously on alternate days, gave a yield equal to that tapped daily in alternate months. In the second section there was an advantage of 4 per cent. in favor of daily tapping in alternate months. In the case of the full herringbone on half the circumference there was an advantage of 16 per cent. in favor of regular alternate day tapping in the first sections, but in the second sections the advantage was much smaller. The yields from trees tapped daily in alternate months and those tapped continuously every other day were apparently about equal. The experiment demonstrated that with the systems under observation it makes little difference as far as latex yield is concerned, whether the trees are tapped continuously on alternate days, or daily in alternate months throughout the year.

INDIVIDUAL PLANTATION BRAND.

On his return from England to Ceylon recently, M. Kelway Bamber reported that some large manufacturers expressed the opinion that estates should have an individual mark stamped on all rubber produced, thus enabling the manufacturer to know the estate which produced the rubber best suited to his purpose.

RESTRICTION ON BELGIAN CONGO RUBBER EXPORTS.

An ordinance of the acting Governor-General of the Belgian Congo, dated August 1, 1915, prohibits the exportation of rubber from the colony, except to Great Britain, France, or to the port of New York. It is necessary to obtain special permits for exports to New York, which must be consigned to the Belgian Consul at New York, subject to the terms of the rubber guarantee.

AFRICAN RUBBER AND PLANTATION COMPETITION.

For some years past African wild rubber exports have displayed a consistent tendency to decrease in volume, largely owing to the low prices prevailing in rubber markets and the ever-increasing production of well-prepared plantation rubber. The average price during 1914 was the lowest in the last five years. Exports of crude rubber from the British Gold Coast Colony fell from 3,223,365 pounds in 1910 to 654,133 pounds in 1914, the value of the exports declining during this period from £385,875 [$1,877,861] to £21,632 [$105,272]. It is also claimed that the prices offered are no longer sufficient to encourage enterprise in this languishing industry.

DYNAMITE TO FERTILIZE RUBBER PLANTATIONS.

Experiments are being conducted in Malaya to test the value of dynamite for liberating the plant-foods in the soil. The Department of Agriculture of the Federated Malay States is conducting these experiments and reports that the trees in dynamited plots increase more rapidly in girth than trees in similar plots not dynamited. The average increase of girth of trees in dynamited plots was, at the end of six months, .48 inch, and, at the end of nine months, .71 inch greater than trees in neighboring plots. The plot treated with dynamite comprised two acres and was blasted in March, 1914.

RUBBER EXPORTS FROM TRINIDAD AND TOBAGO

The exportation of rubber has been prohibited during the war, but, according to the report of the Agricultural Society of Trinidad and Tobago, 810 pounds of this commodity was shipped, on special permits, in June. Exports from January 1 to July 1 of 1914, amounted to 3,785 pounds; for the same period in 1913, 1,505 pounds, and for the first six months of 1912, 2,076 pounds.

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information, is now ready. Price $6.

*Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED OCTOBER 19, 1915.

NO. 1,157,141. Demountable tire rim. B. C. Ball and L. E. Younie—both of Portland, Ore.

1,157,156. Vehicle wheel rim. R. W. Dick, assignor to Louis Rastetter & Son, a copartnership existing between E. Rastetter and W. C. Rastetter—both of Fort Wayne, Ind.

1,157,202. Surgical apparatus with elastic lining. U. C. Bates and J. McLeland—both of Seattle, Wash.

1,157,439. Combined hot water bottle and syringe. M. E. Starr, Mason City, Iowa.

1,157,447. Hair curler having an elastic member. M. W. Stoddard, Minneapolis, Minn.

1,157,536. Self-retaining hose washer formed of resilient material. H. P. Herron, Los Angeles, Cal., assignor to H. Mueller Manufacturing Co., Decatur, Ill.

1,157,559. Rim with tire retaining flange. J. W. Lewellen, Ridal, Pa.

1,157,564. Dust cap for tire valves. H. A. Mason, assignor of one-fourth to S. G. O'Neil and one-fourth to W. E. Quigley—all of Taunton, Mass.

1,157,574. Self-retaining coupling washer. R. Mueller, assignor to H. Mueller Manufacturing Co.—both of Decatur, Ill.

ISSUED OCTOBER 26, 1915.

1,157,763. Tire tool. J. P. Cunningham, York, Neb.

1,157,822. Valve for pneumatic tire. B. E. Taylor, Oak Park, Ill.

1,157,905. Soft rubber stopper. W. G. Rodiger, Chicago, Ill.

1,157,928. Non-skid attachment for tires. J. L. Duff, Cambridge, Ohio.

1,158,039. Pneumatic closet seat buffer. T. J. Florey, Washington, N. J., assignor to American Sanitary Works, New York, N. Y.

1,158,053. Rubber heel insert. O. T. Hutchison, Wagon Mound, N. Mex.

1,158,075. Tire protector with an inner permanent rubber layer and an outer renewable rubber layer. J. Richardson, Buffalo, N. Y.

1,158,139. Truss with an inflatable body. R. P. McCollum, Philadelphia, Pa.

1,158,183. Wheel having a solid tire. N. Cornfield, New York, N. Y.

1,158,206. Toy balloon. R. Griffith, assignor to Miller Rubber Co.—both of Akron, Ohio.

1,158,373. Springwheel. D. Cave, assignor of one-third to H. M. George and one-third to H. Bowman—all of Lincoln, Neb.

ISSUED NOVEMBER 2, 1915.

1,158,526. Shoe having an elastic fabric upper. T. W. Meredith, New York, N. Y.

1,158,573. Device for attaching rubber heels to shoes. G. B. Sinclair, Georgetown, Me., and L. O. Whitman, Marlboro, Mass.

1,158,604. Inner tube for a pneumatic tire. I. J. Webster, Haverhill, Mass., assignor to Reliance A. C. Co., Inc., New York, N. Y.

1,158,607. Anti-skidding armor for tires. H. W. White and A. T. Sheldon—both of Atchee, Col.

1,158,780. Gas dispensing dental device. R. M. Bolton, Chicago, Ill.

1,158,850. Tire carrying wheel. U. S. Renne, Smithland, Iowa.

1,158,859. Washboard with rubber attachment. B. Rudolff, Bayonne, assignor to F. Dorison, Jersey City—both in New Jersey.

1,158,897. Composition of matter, including gutta percha, to be used for rendering paper impervious to air and moisture. E. S. Coleman, Beatrice, Neb.

1,158,943. Combination tip for crutches and canes. S. E. Louden, Riverside, Conn.

1,159,015. Hoze nozzle. H. Gibbs, assignor to W. D. Allen Manufacturing Co.—both of Chicago, Ill.

1,159,026. Tire. W. M. Hill, Minatare, Neb.

1,159,027. Fountain pen feed bar. J. W. Hobson, Jr., Bayonne, N. J.

1,159,068. Anti-skid mat. G. J. Motter, assignor of one-half to G. R. Perry—both of Washington, D. C.

1,159,086. Life preserver. J. J. Puskanen, Chisholm, Minn.

1,159,091. Vehicle wheel with annular flexible tread. T. Rhodus, Chicago, Ill.

1,159,092. Vehicle wheel with annular flexible tread. T. Rhodus, Chicago, Ill.

1,159,125. Diver's helmet. H. Stelzner, assignor to the firm of Drägerwerk, Heinr. & Bernh. Dräger—both of Lübeck, Germany.

1,159,143. Patch for tires. R. W. Wheeler, Akron, Ohio.

1,159,160. Hot water belt. A. C. Beringer, Bellwood, Neb.

1,159,244. Tire. T. Midgley, Sr., assignor to The Midgley Tire & Rubber Co.—both of Lancaster, Ohio.

1,159,250. Vaginal irrigator. F. Moulton, Sunnyside, Wash.

1,159,310. Valve stem shell for pneumatic tires. L. C. Woelz, Los Angeles, Cal.

1,159,313. A demountable rim. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.

1,159,320. Retainer for tire repair devices. W. B. Lashar, assignor to American Chain Co., Inc.—both of Bridgeport, Conn.

1,159,324. Bath fixture. C. A. Minnie, Wellsburg, assignor of two-ninths to P. Seltner, McMechen, and two-ninths to G. Ogden, Wellsburg—all of West Virginia.

(Chemical and Process Patents will be found on pages 113 and 114.)
(Machinery Patents will be found on page 122.)

ISSUED NOVEMBER 9, 1915.

1,159,362. Catamenial appliance. F. C. Cornell, New York, N. Y.

1,159,414. Reinforcement for pneumatic tire. M. Patrick, Geraldine, South Canterbury, New Zealand.

1,159,438. Elastic in drop-seat undergarment. C. M. Walker, Kansas City, Mo.

1,159,496. Rubber dam clamp. J. W. Ivory, Philadelphia, Pa.

1,159,503. Fountain brush. B. D. Knickerbocker, Chicago, Ill.

1,159,507. Shower bath curtain. A. E. Lang, Buffalo, N. Y.

1,159,538. Cushion tire. W. Shimon, Pocahontas, Iowa.

1,159,738. Rubber heel. F. X. Bibeault, Waterbury, Conn.

1,159,758. Rubber heel for shoes. C. Gambino, Birmingham, Ala.

1,159,760. Elastic tire for wheels. C. H. Genth, Philadelphia, Pa.

1,159,797. Wheel rim. J. A. Reid, Wentzville, Mo.

1,159,799. Shock absorber. F. T. Roberts, Trenton, N. J., assignor to The Paramount Rubber Co., Cleveland, Ohio.

1,159,864. Pneumatic tire. A. L. Pearce, assignor to Pearce Arrow Tire & Rubber Manufacturing Co.—both of Philadelphia, Pa.

1,159,882. Toy comprising rubber cord and ball. E. C. Zipfel, Omaha, Neb.

1,159,925. Wheel tire. A. Geering, New York, N. Y.

1,159,961. Resilient wheel. H. Kupperian, Milwaukee, Wis.

1,159,972. Rubber heel. G. K. Maltby, New York, N. Y.

1,160,007. Tire. W. F. Stark, Maurertown, Va.

1,160,023. Swimming appliance. H. White, Ho-nan fu, China.

1,160,112. Artificial foot. O. L. Savitz, assignor of one-third to E. S. Rabenoid and one-third to H. E. Wink—all of Allentown, Pa.

UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent upon the filing of the application.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 6, 1915.]

13,907 (1914). Spring wheel with inflatable inside cushions. R. T. Park, 137 York street, South Melbourne, Victoria, Australia.

13,926 (1914). Swimming appliance. J. D. Russell, 9 Victoria Road, High Road, Kilburn, London.

14,045 (1914). Detachable rim. E. Gooddy, Glenthorn, Trinity Square, Llandudno.

14,079 (1914). Detachable rubber pads for horseshoes. G. Hardman, Wharf Street Shoeing Forge, Preston, Lancashire.

14,236 (1914). Armored tire covers. C. M. Gautier, 27a Bangalore street, Putney, London.

14,244 (1914). Respiratory mask or face piece with pneumatic cushion. S. W. Richards, Hereford House, Craig avenue, and J. E. Spickett—both in Pontypridd, South Wales.

14,257 (1914). Renewable rubber-faced wearing parts for horseshoes. A. Boydell, Hacken Farm, Darcy Lever, and J. Longworth, 522 Blackburn Road, Astley Bridge—both in Bolton, Lancashire.

14,356 (1914). Spring tire with rubber tread blocks. R. J. Wickham, 74 Southview Road, Hornsey, London.

*14,412 (1914). Wheel tire. H. B. Gillette, 328 Lyon street, N. E., Grand Rapids, Michigan, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 13, 1915.]

14,465 (1914). Rubber and wire tire armor and repair material. A. H. Greenfield, 92 Earl's Court Road, London.

14,633 (1914). Tire inner lining. J. W. H. Dew and Azulay Syndicate—both of 8 Laurence Pountney Hill, Cannon street, London.

14,649 (1914). Wheel tire. W. H. Williams, Bromford Lane, Erdington, Birmingham, and O. Farkasch, 145 Pilgrim street, Newcastle-on-Tyne.

14,989 (1914). Pneumatic massage appliance. E. Winton-Charteris, 25 Devonshire street, Higher Broughton, Manchester.

15,052 (1914). Rubber protectors for the glass in headlights of electric motor cars. L. Renault, 15 Rue Gustave Sandoz, Billancourt, Seine, France.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 20, 1915.]

15,172 (1914). Garter. A. W. MacLeod, 32 Victoria street, Westminster.

15,184 (1914). Non-skid band comprising rubber plugs. A. T. Hughes, 27 Gloucester Road, Kew Green, Surrey.

15,295 (1914). Spring wheel with rubber block cushions. J. G. Daw, Wellfield, Llanelly, Carmarthenshire.

15,330 (1914). Golf club with rubber insert. W. Hillman and F. M. Hillman—both of Keresley, near Coventry.

15,351 (1914). Rubber heel. E. K. Czarnowski, 7 Garbarska, and A. Siekacz, 22 Kopernika—both in Cracow, Galicia, Austria.

15,402 (1914). Syringe. H. E. Moul, 1 St. Ann's Chambers, Orchard street, Westminster.

15,439 (1914). Wheel tire. F. W. Howorth, 10 New Court, Lincoln's Inn Fields, London.

*15,458 (1914). Tire valve. M. C. Schweinert, 226 Palisade avenue, West Hoboken, New Jersey, U. S. A.

15,476 (1914). Regenerative breathing apparatus. R. H. Davis, 187 Westminster Bridge Road, London.

*15,581 (1914). Spring wheel with pneumatic cushions. W. M. Hoffman, 25 Gallatin avenue, Buffalo, New York, U. S. A.

15,583 (1914). Waterproof bandage having a pocket for compresses. P. Nebel, Schönau, near Chemnitz, Germany.

*15,625 (1914). Rubber closet seats and lids. M. J. Whelan, Muskegon, Michigan, U. S. A.

*15,626 (1914). Vulcanite coated wooden closet seats and lids. M. J. Whelan, Muskegon, Michigan, U. S. A.

*15,627 (1914). Closet seats and lids. M. J. Whelan, Muskegon, Michigan, U. S. A.

*15,628 (1914). Rubber coated wooden closet seats. M. J. Whelan, Muskegon, Michigan, U. S. A.

15,660 (1914). Tire tube lined with puncture sealing device consisting of a rubber honeycomb structure and rubber filling. D. J. Chappell, 52 College Hill, Llanelly, Carmarthenshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 27, 1915.]

25,592 (1913). Eye and ear protector. G. de Bobory, Gyöngyos, Hungary.

25,711 (1913). Chain comprising blocks of rubber. P. Roderwald, 35 Templehofer-Ufer, Berlin.

27,652 (1913). Vehicle wheel having removable rubber plates. G. Silvestri, 22 Wehrgasse, and A. Findenigg, 23 Belvederegasse—both in Vienna.

28,009 (1913). Ebonite device for teapot handle. Mappin & Webb and R. E. Smith—all of Royal Works, Sheffield.

28,806 (1913). Corset with section of elastic webbing. H. Bünte, 22 Grabenstrasse, Dusseldorf, Germany.

1,902 (1914). Breathing apparatus having rubber diaphragm and breathing bag. J. Parker, Stenhouse street, Cowdenheath, Fifeshire.

2,548 (1914). Galvanic battery. Van Raden & Co., 567 Foleshill Road, and M. Metz, 50 Berkeley Road—both in Coventry.

4,175 (1914). Massage appliance comprising a compressible ball. C. Greb, 40 Hohenzollernstrasse, Cassel, Germany.

4,614 (1914). Rubber in apparatus for modelling feet. C. J. Angeli, 11 Schulstrasse, and L. Russ, 4 Grafenstrasse—both in Darmstadt, Germany.

*7,786 (1914). Elastic protector and cleaner for tobacco pipes. H. E. Hagmueller, 626 Washington street, Hoboken, New Jersey, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 3, 1915.]

15,694. Waterproofed canvas air bag to increase ships buoyancy. J. W. Cook, Milford, Stafford.

15,708. Illuminated signal with rubber strips between the glass plates. A. E. Lucas, 61 City Road, Birmingham.

*15,737. Rubber in filter of vacuum cleaning apparatus. L. L. Ferguson, 6501 South State street, Chicago, U. S. A.

15,756. Fly swatter. C. E. Hodson, West street, Bourne, Lincolnshire.

15,771. India rubber capsules for bottles. F. W. Ingram, Felstead street, Hackney Wick, London.

15,798. Ebonite electrode covering for electric resistances. H. Herapath, 255 Hampstead Road, and M. J. Railing, 67 Queen Victoria street—both in London.

*15,834. Air tubes for wheel tires. W. M. Reason, Pontiac, Mich., U. S. A.

15,869. Game appliance comprising a light inflated ball. E. M. Maxwell, Manor House, Clapham Common, London, and E. L. Allen, Fairview, Beoley, Redditch.

16,004. Ebonite buttons. Firm of F. Everts, Bad Homburg von der Höhe, Germany.

16,106. Detachable rim. G. B. Filmer, 83 Sillock street, South Hill, Moose Jaw, Saskatchewan, Canada.

16,115. Tire valve. H. P. Kraft, 219 Godwin avenue, Ridgewood, N. J., U. S. A.

16,129. Shaving stick cases. W. A. Gatzen, 23 Haus, Grünwald im Isarthal, near Munich, Germany.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

476,444 (November 5, 1914). Improvements in elastic wheels. A. Spreight and E. W. Meredith.

476,457 (April 23). Anti-mud tire casing. E. Lapointe.

476,479 (April 24). Rigid and floating metallic casing for pneumatic wheels with buttons and holes for attaching. J. A. Meunier.

476,514 (November 14). New perfected system for attaching spare automobile wheels and tires. W. J. Parker.

476,571 (April 27). Pneumatic wheel. J. O. Strasbach.

476,622 (November 28). Improved vehicle tires. C. Halle.

476,695 (December 8). Armored casing for pneumatic tires. A. Ross.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingénieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

288,249 (January 13, 1914). Hollow truss. Frantz Dieckmann, Wormserstrasse, 10, Berlin.

288,457 (November 13.) Tire casing. Bruno Salzmann, Feldstrasse, 16, Berlin-Steglitz.

288,632 (March 19). Nipple. Supplement to patent No. 287,382. Carl Cade, Herford-in-Westfalen.

288,200 (June 30). Nipple. Carl Erwin Martin, Seumestrasse, 75, Leipzig-Schleussig.

288,418 (May 12). Objects made of rubber or similar substances. Dr. Emil Franz, Vienna. Represented by J. Apitz and F. Reinhold, Patent-lawyers, Berlin SW 11.

288,688 (April 16, 1913). Method for attaching interchangeable heels of rubber or similar material. Richard Völkner and Fa. Hermann Sieg, Bielefeld.

TRADE MARKS.

ISSUED OCTOBER 19, 1915.

73,675. Heimbach Rubber Heel Co., Duluth, Minn. Illustration of a circle with a hand holding a rubber heel. For rubber heels.

79,996. Union Lock Stitch Co., Boston, Mass. Illustration of a circle with the words *Comfort* and *Service* in white letters on a black background and the words *The Merrick Welt* in black letters on a white background. For boots and shoes made of rubber, leather and canvas.

81,667. United States Rubber Co., New Brunswick, N. J., and New York, N. Y. Illustration of a circle with an inner circle of black with the initials *U S* in white letters on same. For rubber boots and shoes.

82,317. United States Rubber Co., New Brunswick, N. J., and New York, N. Y. Diamond design with the words *Knu-Shu* in white letters on a dark background, the letters being increased successively in size so that the initials U and S stand out. For boots and shoes having fabric uppers and rubber soles.

83,381. The Charles Williams Stores, Inc., Brooklyn, N. Y. Diagram of the East River with the Brooklyn Bridge. For bathing caps, rubber caps, raincoats and rubber collars, etc.

84,772. The Republic Rubber Co., Youngstown, Ohio. Picture of old Father Time with the words *Old Man Mileage* on his hat. For a monthly periodical publication.

87,272. The Goodyear Tire & Rubber Co., Akron, Ohio. Illustration of a tire with a dark background with the words *Goodyear Tire* and a white center with the initials *S V*. For elastic vehicle tires.

88,463. The Frederick W. Lipps Co. of Baltimore City, Baltimore, Md. The word *Society*. For chewing gum, etc.

89,182. Hood Rubber Co., Watertown, Mass. The word *Dayshu*. For rubber boots and shoes, rubber overshoes, and rubber soled canvas boots and shoes.

89,314. Hood Rubber Co., Watertown, Mass. The word *Leisure*. For rubber boots and shoes, rubber overshoes, and rubber soled canvas boots and shoes.

ISSUED OCTOBER 26, 1915.

77,642. American Heyl Co., Inc., New York, N. Y. A swastika with the words *American Heyl Company, Colors, Quality*. For rubber, etc.

81,471. National India Rubber Co., Bristol, R. I. Illustration of a campfire with a melting pot. For rubber and canvas boots and shoes.

81,472. National India Rubber Co., Bristol, R. I. The word *Campfire*. For rubber and canvas boots and shoes.

86,408. The Republic Rubber Co., Youngstown, Ohio. A plate with the words *The Republic Rubber Co., Youngstown, O., Oil, Producer* and *Well*. For belting made of rubber and cotton.

88,280. The Miller Rubber Co., Akron, Ohio. The words *Miller Tires Geared To The Road*. For rubber tires.

ISSUED NOVEMBER 2, 1915.

87,804. The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn. The words *Rub Rub*. For massage mitts.

87,993. Rosenwald & Weil, Chicago, Ill. Illustration of a feather with the words *No-Wate*. For rubberized sheeting or fabric.

ISSUED NOVEMBER 9, 1915.

85,761. A. G. Spalding & Bros., Jersey City, N. J. The word *Perma*. For vulcanizable cement for golf balls.

88,362. Hood Rubber Co., Watertown, Mass. Illustration of a horseshoe. For pneumatic and cushion tires of rubber and rubber and fabric.

88,533. C. A. Crane, Cleveland, Ohio. The words *Chin-Chin*. For chewing gum.

89,265. The Clark Manufacturing Co., Boston, Mass. Picture of a Scotchman in his native dress with the words *Hoot Mon*. For hose supporters.

89,450. C. B. Shane Co., Chicago, Ill. The word *Aervento*. For rain coats.

89,535. The Clark Manufacturing Co., Boston, Mass. The word *Superba*. For elastic webbing.

DESIGNS.

ISSUED OCTOBER 19, 1915.

47,999. Garter. M. B. Hammond, Bridgeport, Conn., assignor to The Thos. P. Taylor Co., a corporation of Connecticut.

ISSUED OCTOBER 26, 1915.

48,029. Tire tread. DeL. P. Harris, New York, N. Y.

48,040. India rubber sole pad for boots and shoes. W. W. Phillips, assignor to Phillips' Patents, Limited—both of London, England.

48,041. India rubber sole pad for boots and shoes. W. W. Phillips, assignor to Phillips' Patents, Limited—both of London, England.

48,042. Rubber heel pad for footwear. W. W. Phillips, assignor to Phillips' Patents, Limited—both of London, England.

ISSUED NOVEMBER 2, 1915.

48,066. Vehicle wheel tire. M. D. Kuhlke, Akron, Ohio.

48,068. Garter. D. E. Latham, assignor to Double Grip Garter Co., Inc.—both of New York, N. Y.

ISSUED NOVEMBER 9, 1915.

48,138. Garter. C. J. White, assignor to The C. J. White Manufacturing Co.—both of New Britain, Conn.

Review of the Crude Rubber Market.

NEW YORK.

NOVEMBER began with a quiet, steady market, reflecting the firmness in plantation sorts on the London market. First latex and smoked sheet sold at 62 cents for spot, January-March deliveries at 61 cents. Upriver fine was quiet at 57 cents.

On November 6 heavy buying was reported in London and prices commenced to advance. During the following week the rise was so rapid that on Thursday, November 11, quotations were withdrawn. This New York movement was evidently due to actual buying orders and continued to develop strength, owing to persistent bidding by buyers in the London market. November 23, First latex and prime ribbed were quoted in a strong market at 85 cents and January-March deliveries at 82 cents. Upriver fine was firm at 76 cents for spot.

This sudden buying movement, attended by an advance of 20 cents a pound in the price of representative plantation grades, has been attributed to various causes. For instance, the Panama Canal is hopelessly blocked and the Suez canal closed indefinitely; German submarines are operating in the Mediterranean. So much for rumors; the facts are that the local market is simply marking time, with the dealers "sitting tight" and watching the London cables. Little actual business was done in spot and nearby and the bargains in futures, quoted a few days ago, have been marked up by the rising tide of higher prices.

Later in the month, the market weakened and prices declined as the strong London buying movement ceased. Plantation grades showed a loss of eight to ten cents a pound from the high levels of a few days before.

LONDON.

The activity that set in late in October has continued into November and the demand is strong and urgent. Available supplies appear to be somewhat limited, despite the fact that stocks are increasing. The arrivals are about 2,000 tons above the average for the month, but deliveries are slow and uncertain. Official figures for the week ending November 6, 1915, show arrivals of 1,311 tons and deliveries of 1,027 tons. Corrected stock figures are 6,417 tons against 3,262 tons on the same date a year ago. Prices have advanced strongly from 2*s.* 6¾*d.* (62.3 cents), the price last week for spot Standard crêpe, to 2*s.* 9½*d.* (67.9 cents), quoted for the same grade on November 12, 1915. January-June crêpe was quoted at 2*s.* 7¾*d.* (63.5 cents). Hard fine Pará advanced 2*s.* the pound. Activity in the market continued and considerable business was done for Russian account. The demand for futures covering all of next year has also been quite noticeable.

November 18, the market advanced sharply and closed strong with Standard crêpe and Smoked sheet spot selling at 2*s,* 11½*d.* (71.9 cents). The upward trend of prices continued, supported by active buying orders, and on November 24, Standard crêpe and Smoked sheet spot were 3*s.* 4*d.* (81 cents).

JAVA.

At the private auction held in Batavia on September 10, 1915, 34,239 pounds were offered and 14,382 pounds sold, crêpe bringing 59.5 cents. On September 17 there were 51,533 pounds catalogued and 36,498 pounds sold at normal prices. The auction of September 24 brought out 33,383 pounds, of which 3,348 pounds were sold. The only grade of crêpe offered sold for 55.5 cents. On October 1 there were 17,908 pounds offered and 13,303 pounds sold at lower prices.

SINGAPORE.

At the auction held on September 22, 1915, 275 tons were offered and 178 tons sold. Smoked sheet ribbed and Fine pale crêpe sold up to 54 cents per pound. On September 29 there were 256 tons catalogued and 207 tons changed hands. Prices for prime qualities were unchanged from last week. The auction of October 6 reflected the better tone of the London market, and prices advanced in an active market. Fine pale crêpe sold for 62.5 cents per pound.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and November 29, the current date:

PARA.	Dec. 1, '14.	Nov. 1, '15.	Nov. 29, '15
Upriver, fine, new	71 @	56 @57	68 @
Upriver, fine, old	73 @75	57 @58	69 @
Islands, fine, new	60 @61	54 @	65 @
Islands, fine, old	62 @64	55 @	.....
Upriver, coarse, new	52 @53	44 @44½	58 @
Upriver, coarse, old	.....	45 @	.....
Islands, coarse, new	32 @33	27 @27½	33 @
Islands, coarse, old	.....	28 @	.....
Cameta	33 @35	28 @29	35 @
Caucho, ball, upper	52 @53	44 @45	58 @
Caucho, ball, lower	50 @51	42 @43	56 @
PLANTATION HEVEA.			
Smoked sheet ribbed	82 @84	Spot.....61½@62 / Jan.-June.60 @60½	75 @ .....
First latex crepe. Near by / Forward	75 @76	Spot.....61½@62 / Jan.-June.60 @60½	75 @ .....
Fine sheets and biscuits, unsmoked	66 @68	58 @58½	.....
CENTRALS.			
Corinto	46 @47	41 @42	52 @53
Esmeralda, sausage	46 @47	41 @42	54 @55
Nicaragua, scrap	45 @46	40 @41	53 @55
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	45 @46	42 @	53½@54
Mexican, slab	.....	30 @	.....
Manicoba	.....	32 @39	.....
Mangabeira, sheet	42 @44	32 @38	36 @39
Guayule	34 @	32½@	33 @35
Balata, sheet	52 @53	52½@53	56 @58
Balata, block	43 @44	44 @45	45 @46
AFRICAN.			
Lopori, ball, prime	No supply	53 @54	65 @
Upper Congo, ball, red	No supply	52 @	.....
Massai, red	No supply	52 @	.....
Soudan Niggers	No supply	.....	.....
Cameroon, ball	45 @	.....	.....
Benguela	34 @	32 @	39 @40
Accra, flake	28 @	.....	35 @37
Rio Nunez Niggers	.....	53 @	63 @64
Konakry Niggers	.....	53 @	60 @61
EAST INDIAN.			
Assam	.....	47 @	50 @54
Pontianak	.....	6½@	6¼@ 7
Gutta Siak	.....	11½@12	11¼@12
Borneo II	40 @	.....	38 @40
Gutta Percha	.....	2.50@	.....
Red Maccassa	.....	.....	1.85@2.00

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "The situation as regards commercial paper remains unchanged from what we have reported for several months past, the demand continuing good and the best rubber names going freely at 4@4½ per cent. (with occasionally something extra choice a little lower), and those not so well known 5@5½ per cent."

PRICES FOR OCTOBER (NEW RUBBER).

	1913.	1914.	1915.
Upriver, fine	$0.73@0.83	$0.64@0.66	$0.55@0.57
Upriver, coarse	.47@ .49	.43@ .47	.42@ .45
Islands, fine	.67@ .72	.49@ .53	.50@ .54
Islands, coarse	.28@ .29	.26@ .28	.26@ .28
Cametá	.36@ .38	.29@ .32	.28@ .29

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weights in Pounds.*]

OCTOBER 25.—By the steamer *Rio de Janeiro* from Pará:

	Fine.	Medium.	Coarse.	Caucho.	TOTAL.
Meyer & Brown	41,500	4,900	132,900	20,400=	199,700
Henderson & Korn	.....	34,800	86,300	8,000=	129,100
Arnold & Zeiss	50,900	5,700	16,300	5,500=	78,400
G. Amsinck & Co.	15,700	700	27,700	.....=	44,100
J. T. Johnstone & Co.	.....	.....	13,200	.....=	13,200
H. A. Astlett & Co.	.....	.....	5,400	4,700=	10,100
Total	108,100	46,100	281,800	38,600=	474,600

NOVEMBER 1.—By the steamer *Denis* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown	138,200	20,000	97,600	23,100=	278,900
General Rubber Co	300,100	26,300	50,900	8,100=	285,400
Arnold & Zeiss	121,600	8,100	46,000	40,300=	216,000
Henderson & Korn	49,700	28,200	64,300	12,800=	155,000
Robinson & Co	115,900	300	14,000	10,900=	141,100
J. T. Johnstone & Co	35,000	1,000	50,000	7,000=	93,000
Aldens' Successors, Ltd	22,900	25,400	36,000	400=	84,700
W. R. Grace & Co	74,100	2,400	5,300	.....=	81,800
Hagemeyer & Brunn	28,300	.....	4,200	.....=	32,500
H. A. Astlett & Co	.....	8,400	19,100	.....=	27,500
Adolph Hirsch & Co	.....	8,700	3,900	10,900=	23,500
G. Amsinck & Co	8,600	.....	9,200	.....=	17,800
Muller, Schall & Co	3,600	.....	.....	1,200=	4,800
Total	798,000	128,800	400,500	114,700=	1,442,000

NOVEMBER 8.—By the steamer *Minas Geraes* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown	82,600	7,300	68,600	20,500=	179,000
General Rubber Co	160,500	20,800	57,900	7,200=	246,400
G. Amsinck & Co	97,800	4,700	25,500	600=	128,600
Arnold & Zeiss	25,600	1,800	57,700	2,400=	87,500
Henderson & Korn	11,900	7,600	55,500	3,900=	78,900
Adolph Hirsch & Co	43,300	.....	.....	.....=	43,300
Robinson & Co	.....	.....	35,000	.....=	35,000
H. A. Astlett & Co	.....	.....	15,200	.....=	15,200
Aldens' Successors, Ltd	3,800	1,500	5,500	.....=	10,800
W. R. Grace & Co	7,000	.....	.....	.....=	7,000
Total	432,500	43,700	320,900	34,600=	831,700

PARA RUBBER VIA EUROPE.

		Pounds.
OCTOBER 26.—By the *Cristobal*=Colon:		
G. Amsinck & Co. (Fine)	19,000	
G. Amsinck & Co. (Caucho)	8,000	
W. R. Grace & Co. (Fine)	62,000	
W. R. Grace & Co. (Caucho)	10,000	99,000
OCTOBER 29.—By the *Adriatic*=Liverpool:		
Aldens' Successors, Ltd. (Coarse)		60,000
NOVEMBER 11.—By the *Colon*=Colon:		
G. Amsinck & Co. (Caucho)	7,500	
W. R. Grace & Co. (Fine)	7,500	15,000

AFRICANS.

OCTOBER 25.—By the *Colorado*=Hull:		
Aldens' Successors, Ltd.		62,212
OCTOBER 29.—By the *Den of Ogil*=Liverpool:		
Arnold & Zeiss	80,000	
General Rubber Co	33,500	
Earle Bros.	6,000	119,500
OCTOBER 30.—By the *Ardgarroch*=London:		
Arnold & Zeiss		11,200
OCTOBER 30.—By the *Chinese Prince*=Singapore:		
L. Littlejohn & Co		11,200
NOVEMBER 1.—By the *Monginevio*=Lisbon:		
Edward Maurer Co., Inc	112,000	
Robert Badenhop	112,000	224,000
NOVEMBER 4.—By the *Den of Airlie*=London:		
Arnold & Zeiss		22,300
NOVEMBER 8.—By the *Cymric*=Liverpool:		
Arnold & Zeiss	65,000	
Henderson & Korn	11,200	
Fred Stern & Co	22,500	
Rubber Trading Co	4,000	102,700
NOVEMBER 16.—By the *Saxonia*=Liverpool:		
Henderson & Korn	8,000	
Robert Badenhop	4,000	
Rubber & Gnayule Agency, Inc.	1,500	
Various	1,000	14,500

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

OCTOBER 25.—By the *Morro Castle*=Mexico:		
General Export Commission Co.	1,000	
OCTOBER 25.—By the *Rio de Janeiro*=Para:		
Adolph Hirsch & Co	3,500	
Lawrence Johnson & Co	5,500	9,000
OCTOBOR 26.—By the *Metapan*=Port Limon:		
Isaac Brandon & Bros.		2,000
OCTOBER 26.—By the *Guantanamo*=Mexico:		
E. Steiger & Co	20,000	
Hard & Rand	1,500	
Lanman & Kemp	1,500	
W. A. Avis & Co	1,000	
Harburger & Stack	1,000	25,000
OCTOBER 26.—By the *Medina*=Galveston:		
Various		*30,000
OCTOBER 27.—By the *El Rio*=Galveston:		
Various		*45,000
OCTOBER 28.—By the *Panama*=Colon:		
G. Amsinck & Co	12,900	
A. M. Capen's Sons	3,400	
Pablo, Calvet & Co	1,100	
Pizu, Nephews & Co	7,000	
Mecke & Co	500	
Gontard & Co	100	25,000
NOVEMBER 1.—By the *Tivives*=Cortez:		
Rosenthal & Sons	1,000	
R. B. Hubbell	500	
E. H. Vivie	300	1,800
NOVEMBER 1.—By the *New York*=Liverpool:		
Adolph Hirsch & Co	10,000	

		Pounds.
NOVEMBER 1.—By the *Pastores*=Port Limon:		
Isaac Brandon & Bros.		1,000
NOVEMBER 1.—By the *El Sol*=Galveston:		
Various		*180,000
NOVEMBER 4.—By the *Alliance*=Colon:		
G. Amsinck & Co		4,000
NOVEMBER 6.—By the *San Jacinto*=Galveston:		
Various		*30,000
NOVEMBER 6.—By the *Zacapa*=Colombia:		
Mecke & Co	1,500	
Caballero & Blanco	200	1,700
NOVEMBER 8.—By the *Minas Geraes*=Bahia:		
J. H. Rossbach & Bros.	14,000	
Lawrence Johnson & Co	4,500	18,500
NOVEMBER 8.—By the *Canova*=Bahia:		
Adolph Hirsch & Co	35,000	
NOVEMBER 8.—By the *Calamares*=Port Limon:		
Isaac Brandon & Bros.		500
NOVEMBER 8.—By the *Mexico*=Mexico:		
Graham, Hinckley & Co	7,000	
American Trading Co	17,000	
J. S. Sembrada & Co	1,000	
G. Amsinck & Co	700	
H. Marquardt & Co	500	26,200
NOVEMBER 11.—By the *Eastern Prince*=Bahia:		
Adolph Hirsch & Co		20,000
NOVEMBER 11.—By the *Colon*=Colon:		
Lawrence Johnson & Co	6,000	
G. Amsinck & Co	3,000	
W. R. Grace & Co	3,000	12,000
NOVEMBER 12.—By the *Canillo*=Cartagena:		
G. Amsinck & Co	7,500	
International Trading Co	3,500	
Caballero & Blanco	200	11,200
NOVEMBER 13.—By the *Concho*=Galveston:		
Various		*60,000
NOVEMBER 13.—By the *Esperanza*=Mexico:		
Lawrence Johnson & Co	10,000	
J. A. Medina & Co	10,000	
Graham, Hinckley & Co	1,000	21,000
NOVEMBER 15.—By the *Camoens*=Bahia:		
Adolph Hirsch & Co		45,000
NOVEMBER 16.—By the *Tenadores*=Port Limon:		
Isaac Brandon & Bros.		3,500
NOVEMBER 16.—By the *Sixaola*=Cortez:		
Rosenthal & Sons	3,500	
J. S. Sembrada & Co	3,000	
Eggers & Heinlein	1,000	
G. Amsinck & Co	300	7,800
NOVEMBER 18.—By the *Santa Marta*=Colombia:		
Mecke & Co		1,000
NOVEMBER 20.—By the *Advance*=Colon:		
Gravenhorst & Co	8,000	
Gontard & Co	500	8,500
NOVEMBER 22.—By the *Morro Castle*=Mexico:		
American Trading Co	6,500	
I. J. Toledano & Co	4,500	
J. A. Medina & Co	2,000	
H. Marquardt & Co	1,500	
Various	10,000	24,500

EAST INDIAN.

[*Denotes plantation rubber.]

OCTOBER 25.—By the *Samland*=London:		
Edward Maurer Co., Inc	*14,500	
Charles T. Wilson Co., Inc	*67,000	
Robert Badenhop	*33,500	
Raw Products Co	*9,000	*124,000
OCTOBER 27.—By the *Cloughton*=Liverpool:		
The B. F. Goodrich Co	*22,500	
OCTOBER 29.—By the *Kafue*=Colombo:		
Meyer & Brown	*270,000	
L. Littlejohn & Co	*125,458	
Arnold & Zeiss	*315,000	

		Pounds.
W. H. Stiles	*135,000	
J. T. Johnstone & Co	*23,000	
Hood Rubber Co	*22,500	
W. R. Grace & Co	*11,200	
Henderson & Korn	*40,000	
Aldens' Successors, Ltd	*21,280	
Various	*127,762	*1,091,200
OCTOBER 30.—By the *Ordgarroch*=London:		
Meyer & Brown	*275,000	
L. Littlejohn & Co	*140,198	
The B. F. Goodrich Co	*425,000	
General Rubber Co	*200,000	
J. T. Johnstone & Co	*220,000	
Robinson & Co	*33,500	
Rumsey & Greutert Co., Inc.	*56,000	
W. R. Grace & Co	*11,200	
Aldens' Successors, Ltd	*9,000	
Rubber Trading Co	*24,000	
Edward Maurer Co., Inc.	*75,000	
Various	*51,000	*1,519,898
OCTOBER 30.—By the *Mesaba*=London:		
Meyer & Brown	*200,000	
Edward Maurer Co., Inc	*75,000	
The B. F. Goodrich Co	*170,000	
General Rubber Co	*112,000	
Charles T. Wilson Co., Inc.	*135,000	
L. Littlejohn & Co	*41,800	*683,800
OCTOBER 30.—By the *Chinese Prince*=Singapore:		
Meyer & Brown	*22,400	
Goodyear Tire & Rubber Co.	*50,000	
Edward Maurer Co., Inc.	*48,000	
The B. F. Goodrich Co	*450,000	
L. Littlejohn & Co	*268,200	
Charles T. Wilson Co., Inc.	*48,000	
Rumsey & Greutert Co., Inc.	*56,000	
W. R. Grace & Co	*45,000	
Henderson & Korn	*100,000	
Arnold & Zeiss	*62,500	
J. T. Johnstone & Co	*125,000	
General Rubber Co	*27,000	
Aldens' Successors, Ltd	*60,508	
Robinson & Co	*33,500	
Core & Herbert	*15,000	
H. Jeffords	*4,000	*1,415,108
NOVEMBER 3.—By the *Minnehaha*=London:		
General Rubber Co	*80,000	
Charles T. Wilson Co., Inc.	*35,000	
Aldens' Successors, Ltd	*15,016	
Robert Badenhop	*11,200	*141,216
NOVEMBER 4.—By the *Den of Airlie*=London:		
General Rubber Co	*180,000	
L. Littlejohn & Co	*19,300	
Rubber Trading Co	*18,000	
Robinson & Co	*45,000	
J. T. Johnstone & Co	*26,000	
Aldens' Successors, Ltd	*7,000	
Various	*31,700	*327,000
NOVEMBER 9.—By the *Venezuela*=Paramaribo:		
G. Amsinck & Co	*2,500	
Arnold & Zeiss	*1,500	*4,000
NOVEMBER 11.—By the *Missouri*=London:		
L. Littlejohn & Co		*10,631
NOVEMBER 12.—By the *Meldford Hall*=Colombo:		
Meyer & Brown	*410,000	
General Rubber Co	*67,000	
L. Littlejohn & Co	*305,200	
Arnold & Zeiss	*370,000	
Henderson & Korn	*65,000	
J. T. Johnstone & Co	*27,000	
Various	*237,800	*1,482,000
NOVEMBER 13.—By the *Lord Sefton*=Liverpool:		
The B. F. Goodrich Co		*4,500
NOVEMBER 13.—By the *Pannonia*=London:		
Meyer & Brown	*35,000	
Aldens' Successors, Ltd	*329,694	
General Rubber Co	*340,000	
J. T. Johnstone & Co	*420,000	
Rubber Trading Co	*30,000	
Rumsey & Greutert Co., Inc.	*35,000	
The B. F. Goodrich Co	*110,000	
Edward Maurer Co., Inc	*22,500	
Robert Badenhop	*7,000	
Henderson & Korn	*2,200	
Charles T. Wilson Co., Inc.	*2,000	
Various	*5,306	*1,338,700

Plantation Rubber from the Far East.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. Aug. 31.	Malacca. Sept. 30.	Penang. Aug. 31.	Port Swettenham. Oct. 13.	TOTAL.
Great Britain..*pounds*	20,766,800	6,159,464	15,815,798	22,526,435	65,268,497
Continent	3,367,067	.....	709,732	24,640	4,101,439
Japan	1,336,982	.....	.....	.....	1,336,982
Ceylon	144,983	.....	393,733	1,209,710	1,748,426
United States	22,437,200	.....	1,265,667	.....	23,702,867
Australia	281,259	.....	.....	.....	281,259
Total	48,334,291	6,159,464	18,184,930	23,760,785	96,439,470
Same period, 1914.	25,420,119	3,579,164	13,801,332	24,840,136	67,640,751
Same period, 1913.	16,353,430	.....	9,939,467	22,244,550	48,537,447
Same period, 1912.	8,596,675	.....	5,851,230	15,811,164	30,259,069

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to October 18, 1914 and 1915. Compiled by the Ceylon Chamber of Commerce.)

To—	1914.	1915.
Great Britain .....*pounds*	13,864,349	18,996,191
United States	7,105,957	13,043,672
Belgium	2,984,009	.....
Germany	1,037,415	.....
Australia	508,073	621,977
France	317,912	379,872
Japan	220,700	245,211
Russia	105,212	332,200
Straits Settlements	42,535	119,933
Italy	1,772	.....
India	1,050	1,000
Canada and Newfoundland.....	.....	384,940
Total	26,188,984	34,124,996

(Same period, 1913, 19,656,253 pounds; same period, 1912, 10,058,285.)

The export figures of rubber given in the above table for 1914 include the imports re-exported. (These amount to 3,037,159 pounds.) To arrive at the total quantity of Ceylon rubber exported for that period deduct these imports from the total exports. The figures for 1915 are for Ceylon rubber only.

SINGAPORE.

Guthrie & Co., Ltd., report [October 6, 1915]:

Advices received from London during the past few days have indicated a better tone in the rubber market, and this was reflected at the auction held today, prices all round showing substantial improvements.

Bidding was very brisk, and for many lots there was keen competition. Fine pale crepe was again in exceptional demand, one lot fetching $133, an increase of $4 on last week's best. Fine ribbed smoked sheet was $3 better at $132. Plain smoked sheet was wanted, the highest price paid, viz., $125, being $2 up on the week.

The lower grades shared in the general improvements, all parcels meeting with a ready sale.

Virgin and loose scraps marked increases of $1 and $10, respectively.

Of 222 tons offered, 193 tons changed hands.

The following was the course of values:

	In Singapore Picul.*	Sterling equivalent per pound in London.	Equivalent per pound in cents.
Sheet, fine ribbed smoked....	$130@132	2/ 6¼@2/ 6¾	61.32@62.33
Sheet, fair to good ribbed smoked	125@128	2/ 5¼@2/ 5⅞	59.29@60.56
Sheet, plain, smoked.....	122@125	2/ 4⅝@2/ 5¼	58.02@59.29
Sheet, unsmoked	116@124	2/ 3⅛@2/ 5	55.49@58.79
Crepe, fine pale.....	131@133	2/ 6½@2/ 7	61.83@62.84
Crepe, good pale.....	127@129	2/ 5¾@2/ 6⅛	60.05@61.06
Crepe, fine brown.....	123@127	2/ 4⅞@2/ 5⅜	58.53@60.05
Crepe, good brown.....	116@120	2/ 3⅛@2/ 4¾	55.49@57.27
Crepe, dark	110@116	2/ 2¼@2/ 3⅜	52.95@55.49
Crepe, bark	97@109	1/11⅛@2/ 1⅞	47.38@52.45
Scrap, virgin	83@ 91	1/ 8⅛@1/10⅛	41.30@44.85
Scrap, pressed	86@	1/ 9 @	42.57@
Scrap, loose	66@106	1/ 4⅞@2/ 1¼	34.20@51.18

*Picul = 133⅓ pounds.
Quoted in S. S. dollars = 2/4 [56 cents].

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram received from the colonial secretary, Singapore, announces that the export of plantation rubber from the Straits Settlements during the month of October amounted to 2,641 tons, as compared with 4,725 tons in September, and 2,006 tons in the corresponding month last year.

The following is a comparative table showing the export for three years:

	1913.	1914.	1915.
January .....*tons*	784	1,181	2,576
February	743	1,703	2,741
March	898	1,285	2,477
April	762	1,548	1,978
May	814	1,309	3,588
June	812	1,480	2,249
July	1,120	1,584	2,324
August	1,315	1,325	2,295
September	1,057	1,602	4,725
October	1,144	2,006	2,641
Total	9,449	15,023	27,594

These figures include transhipments of rubber from various places in the neighborhood of the Straits Settlements, such as Java, Sumatra, Borneo, and the non-Federated Malay States, as well as rubber actually exported from the colony, but do not include rubber exports from the Federated Malay States.

FEDERATED MALAY STATES RUBBER EXPORTS.

An official cablegram received from Kuala Lumpur announces that the export of plantation rubber from the Federated Malay States during the month of October amounted to 4,120 tons, as compared with 3,334 tons in September, and 2,897 tons in the corresponding month last year.

The following is a comparative table showing the export for three years:

	1913.	1914.	1915.
January .....*tons*	2,131	2,542	3,473
February	1,757	2,364	3,411
March	1,737	2,418	3,418
April	1,626	2,151	2,777
May	1,225	2,069	2,708
June	2,005	2,306	3,403
July	1,781	2,971	3,687
August	2,363	1,850	3,796
September	2,000	2,879	3,334
October	2,160	2,897	4,120
Total	18,785	24,447	34,127

PLANTATION RUBBER EXPORTS FROM JAVA AND MADURA.

EXPORTS TO—		August, 1914.	August, 1915.	Eight Months Ending August 31, 1914.	Eight Months Ending August 31, 1915.
Holland	Ficus ...*pounds*	2,581	2,200	20,845	29,262
	Ficus (to order)	.....	.....	12,932	.....
	Hevea	160,600	228,800	1,949,200	1,782,000
	Hevea (to order)	11,000	.....	473,000	4,400
	Manihot (ceara)	755	.....	126,034	16,733
	Castilloa	.....	7,467	41,950	13,779
	Total	174,936	238,467	2,623,961	1,846,174
Great Britain	Ficus	.....	9,115	39,180	40,121
	Hevea	92,400	374,000	2,211,000	3,198,800
	Manihot (ceara)	.....	3,782	27,744	19,378
	Castilloa	.....	.....	20,896	68,350
	Total	92,400	386,897	2,298,820	3,326,649
Belgium	Ficus	.....	.....	462	.....
	Hevea	17,600	.....	550,000	.....
	Total	17,600	.....	550,462	.....
France	Hevea	.....	.....	6,600	.....
United States....	Hevea	6,600	1,111,000	99,000	5,198,600
	Manihot (ceara)	.....	.....	.....	8,692
	Total	6,600	1,111,000	99,000	5,207,292
Germany	Hevea	.....	.....	79,200	.....
	Castilloa	.....	.....	2,735	.....
	Total	.....	.....	81,935	.....
Singapore	Ficus	.....	528	328	13,171
	Hevea	11,000	94,600	173,800	446,600
	Manihot (ceara)	.....	.....	260	.....
	Total	11,000	95,128	174,388	459,771
Japan	Hevea	.....	2,200	.....	213,400
Other Countries..	Ficus	249	.....	249	543
	Hevea	.....	13,200	.....	99,000
	Total	249	13,200	249	99,543
	Grand Total	302,785	1,846,892	5,835,415	11,152,829

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS, DURING OCTOBER, 1915.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
J. Marques .....*kilos*	.....	27,618	91,792	10,731	130,141	470,076	5,328	150	.....	475,554	605,695
Suter & Co.....	44,799	3,857	42,328	10,212	101,196	.....	.....	.....	.....	.....	101,196
Adelbert H. Alden, Ltd.....	340	745	318	.....	1,403	53,184	1,530	45	5,940	60,699	62,102
General Rubber Co. of Brazil....	137,578	14,030	100,763	16,424	268,795	53,890	2,550	.....	.....	56,440	325,235
Pires Teixeira & Co.....	53,186	5,870	101,023	13,037	173,116	94,457	7,334	2,177	259	104,227	277,343
Zarges, Berringer & Co.....	23,046	1,360	856	575	25,837	.....	.....	.....	.....	.....	25,837
Seligmann & Co.....	14,806	.....	.....	.....	14,806	.....	.....	.....	.....	.....	14,806
Suárez Hermanos & Co.....	13,488	.....	2,073	38	15,599	.....	.....	.....	.....	.....	15,599
Stowell Brothers	.....	340	.....	.....	340	24,310	1,109	476	2,501	28,396	28,736
Sundries	25,330	1,190	33,035	300	59,855	10,528	718	2,215	2,494	15,955	75,810
Exports from Pará.....	312,573	55,010	372,188	51,317	791,088	706,445	18,569	5,063	11,194	741,271	1,532,359
Manáos	352,426	56,268	130,782	38,553	578,029	489,870	48,161	12,268	54,171	604,470	1,182,499
Iquitos	.....	.....	.....	.....	.....	54,071	2,665	6,665	14,331	77,732	77,732
Total, October, 1915.....	664,999	111,278	502,970	89,870	1,369,117	1,250,386	69,395	23,996	79,696	1,423,473	2,792,590
Total, September, 1915.....	1,320,999	220,730	582,698	316,838	2,441,265	451,037	28,155	32,280	20,840	532,312	2,973,577

EXPORTS OF INDIA RUBBER FROM MANAOS DURING OCTOBER, 1915.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Suter & Co.....*kilos*	49,520	3,171	17,627	12,750	83,068	69,630	7,425	32	10,350	87,437	170,505
General Rubber Co. of Brazil....	135,392	20,231	29,077	9,300	194,000	51,271	8,423	782	5,263	65,739	259,739
Pralow & Co.....	82,772	6,110	29,552	8,478	126,912	80,848	6,400	2,700	7,350	97,298	224,210
Adelbert H. Alden, Ltd.....	12,385	12,912	20,673	205	46,175	96,329	60	210	23,898	120,497	166,672
G. Fradelizi	31,355	5,684	24,373	2,652	64,064	79,262	13,027	98	.....	92,387	156,451
Tancredo Porto & Co.....	20,640	8,160	9,480	5,168	43,448	77,657	10,343	5,784	2,452	96,236	139,684
Stowell & Sons.....	.....	.....	.....	.....	.....	27,407	2,298	957	4,587	35,249	35,249
H. Balding	20,362	.....	.....	.....	20,362	6,486	.....	.....	.....	6,486	26,848
Th. Levy, Camille & Co.....	.....	.....	.....	.....	.....	372	185	1,311	235	2,103	2,103
Mesquita & Co.....	.....	.....	.....	.....	.....	608	.....	394	36	1,038	1,038
	352,426	56,268	130,782	38,553	578,029	489,870	48,161	12,268	54,171	604,470	1,182,499
Transit, Iquitos	.....	.....	.....	.....	.....	54,071	2,665	6,665	14,331	77,732	77,732
Total, October, 1915.....	352,426	56,268	130,782	38,553	578,029	543,941	50,826	18,933	68,502	682,202	1,260,231
Total, September, 1915.....	680,083	79,965	121,728	192,781	1,074,557	198,278	24,498	10,363	9,390	242,529	1,317,086

CUSTOM HOUSE STATISTICS.

PORT OF BOSTON—SEPTEMBER, 1915.

Imports:	Pounds.	Value.
Gutta jelutong	60,507	$2,513
Gutta percha	146,415	13,690
India rubber	93,210	44,266
India rubber scrap.....	60,287	6,451
Total	360,419	$66,920
Exports:		
India rubber, reclaimed....	24,809	$3,400

PORT OF PHILADELPHIA—SEPTEMBER, 1915.

Exports:		
Rubber scrap	93,375	$6,706

PORT OF SAN FRANCISCO—SEPTEMBER, 1915.

Imports:		
India rubber	216	$90

PORT OF CHICAGO—OCTOBER, 1915.

Imports:		
Rubber scrap	19,184	$1,070

PORT OF CLEVELAND—OCTOBER, 1915.

Imports:	Pounds.	Value.
India rubber, crude.....	712	$600
Rubber scrap	404	25
Total	1,116	$625

PORT OF DETROIT—OCTOBER, 1915.

Imports:		
Rubber scrap	41,441	$5,702
Exports:		
Rubber scrap	57,578	$2,966

PORT OF NIAGARA FALLS—OCTOBER, 1915.

Imports:		
Rubber scrap	139,760	$6,829
Exports:		
India rubber, crude.....	200,731	$103,249
Rubber scrap	10,070	1,648
Total	210,801	$104,897

PORT OF PORT HURON—OCTOBER, 1915.

Imports:	Pounds.	Value.
Rubber scrap	41,441	$5,702

PORT OF BOSTON—OCTOBER, 1915.

Imports:		
Gutta jelutong	422,800	$19,495
Gutta percha	60,012	3,729
India rubber	88,871	49,869
India rubber scrap.....	50,887	4,424
Total	622,570	$77,517
Manufactures of india rubber	.....	866
Exports:		
India rubber, scrap.....	18,971	2,432
India rubber, reclaimed.....	24,898	3,500
Belting, hose, etc.....	.....	3,015
India rubber boots.....	53,653	119,416
India rubber shoes.....	86,271	33,924
Automobile tires	.....	594
All other manufactures of india rubber	.....	91,499

IMPORTS AND EXPORTS OF RUBBER AND RUBBER MANUFACTURES AT THE PORT OF NEW YORK.

IMPORTS.

Week ending—	India Rubber. Packages.	Value.	Rubber Waste. Packages.	Value.	Rubber Manufactures. Packages.	Value.	Chicle. Packages.	Value.
October 30, 1915.....	17,146	$1,461,724	324	$4,633	26	$3,176	522	$30,491
November 6	41,373	3,257,088	118	4,950	25	2,054	182	9,558
November 13	11,759	1,010,267	185	8,580	19	2,155	13	1,013
November 20	16,599	1,281,235	96	1,295	78	8,021	779	72,463

In addition to the above the following was imported during the week ending November 20: Substitutes, 32 packages, value $1,685.

EXPORTS—September 15 to October 15, 1915.

MANUFACTURES TO—	Belting, Hose and Packing.	Footwear. Boots.	Shoes.	Tires. Auto.	Other tires and mfs. of.	Insulated Wire and Cable.	Other mfs. of, India Rubber.	Fountain Pens.	Chewing Gum.	Reclaimed Rubber.	Scrap.
Africa	$32,170	$420	$136	$19,112	$790	$731	$2,812	.....	$466	.....	.....
Argentina	3,258	164	.....	27,646	3,878	17,131	9,628	$46	1,867	.....	.....
Australia	907	.....	13,880	11,029	31,453	1,180	1,508	.....	34,866	.....	.....
Brazil	3,744	55	249	17,460	19,099	9,298	8,734	701	.....	.....	$3,573
Bolivia	761	.....	.....	234	.....	3,813	2,335	.....	170	.....	.....
British Guiana	.....	.....	.....	1,431	3	.....	.....	.....	.....	.....	.....
Canada	28	726	13,514	297	495	.....	253	.....	174	.....	.....
Central America and Panama	7,801	.....	353	37,632	2,586	4,182	18,375	4	3,079	.....	2,361
Chile	9,496	6,647	.....	969	8,903	13,579	1,357	.....	134	.....	.....
China	.....	.....	.....	.....	.....	.....	483	.....	.....	.....	.....
Colombia	926	.....	.....	1,745	1,441	3,060	1,282	.....	51	.....	.....
Dutch East Indies.....	.....	620	.....	118	3,280	.....	377	.....	.....	.....	.....
Ecuador	107	.....	.....	309	478	337	313	.....	2	.....	.....
France	3,043	35	1,401	599	55,714	.....	7,754	.....	740	.....	.....
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Great Britain	25,187	123,135	5,818	604,558	170,261	18,296	124,552	945	10,772	$3,003	18,386
Greece	.....	.....	.....	.....	100	.....	48	.....	470	.....	.....
Holland	.....	.....	.....	1,203	1,900	1,514	977	.....	.....	.....	.....
India	.....	202	.....	542	94	.....	85	.....	24	.....	.....
Italy	613	.....	1,664	50,018	44,814	.....	.....	.....	220	.....	.....
Japan	3,629	.....	.....	57	.....	.....	3,832	.....	33	.....	.....
Mexico	1,853	.....	.....	563	700	1,588	133	.....	.....	.....	28
New Zealand	136	506	.....	2,329	413	.....	.....	.....	.....	.....	.....
Norway, Sweden and Denmark	377	.....	6,972	740	8,726	33,852	1,602	.....	.....	.....	.....
Oceania	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....
Peru	4,083	477	.....	1,786	305	3,896	417	.....	48	.....	.....
Philippines	63	.....	2,170	265	5,386	201	.....	.....	.....	.....	.....
Portugal	.....	.....	.....	72	9	95	.....	380	196	.....	.....
Roumania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia	.....	.....	.....	.....	.....	24	.....	.....	.....	.....	.....
Spain	.....	.....	.....	6,170	1,283	573	2,957	.....	.....	.....	.....
Straits Settlements	.....	.....	.....	520	.....	.....	.....	.....	.....	.....	.....
Uruguay	1,880	.....	.....	6,353	3,507	2,741	312	.....	.....	.....	.....
Venezuela	73	.....	.....	1,394	810	261	1,693	.....	.....	.....	.....
West Indies	8,217	41	643	37,683	5,253	14,653	16,606	.....	157	.....	.....
Totals	$108,352	$133,028	$46,850	$832,834	$371,681	$121,005	$208,425	$2,081	$93,469	$3,003	$24,348

In addition to the above the following were exported during the same period: To Great Britain, aeroplanes, value $28,080, and india rubber, value $2,355; to Spain, aeroplanes, value $37,980; to Brazil, india rubber, value $720, and to Argentina, india rubber, value $536.

THE RUBBER SCRAP MARKET.

A REVIEW of the rubber scrap market for the first week of November failed to disclose any particular feature of interest to the trade other than the firm tone that has persistently prevailed. The mills disclaimed any shortage in stocks, and buyers generally are apparently indifferent to attractive offers based on large deliveries. Inquiries for boots and shoes developed a surprisingly strong market and in several instances quotations of 9 cents delivered were made. The mechanical goods manufacturers were reported as active buyers and therefore matting, black scrap, and hose stocks developed firmer prices. The balance of the list appeared to be unattractive to buyers and prices remained practically unchanged.

Boots and shoes continued to be the leading feature during the second week, as far as prices were concerned, and mills were asked to pay 8¼ to 8⅞ cents delivered. The tire situation developed firmness, and sales of white tires were reported at 6⅞ cents to consumers and mixed auto tires in desirable lots were offered at 5¼ to 5½ cents.

As the month progressed, the tendency of the market to advance, with boots and shoes leading, was very evident. Large buyers were obliged to divide their orders to avoid the creation of higher levels; but in every instance unexpected strength and firm price were encountered.

Crude rubber prices advanced rapidly in the beginning of the third week, and by November 20 the active buying in London had advanced prices 15 cents a pound. This of course was reflected in the rubber scrap market and prices rose accordingly.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

November 29, 1915.

	Per Pound.
Boots and shoes	$0.10¼@0.10½
Trimmed arctics	.08⅛@ .08¼
White tires, Goodrich and Goodyear	.07½@ .07⅝
Auto tires, standard white	.06 @
Auto tires, standard mixed	.05⅞@
stripped, unguaranteed	.03¼@
Auto peelings, No. 1	.08¾@
No. 2	.07½@
Inner tubes, No. 1	.27 @ .28
No. 2	.11¾@ .12
red	.13 @ .14
Irony tires	.02¼@
Bicycle tires	.03¼@
Solid tires	.05 @ .05⅛
White scrap, No. 1	.12 @ .12⅛
No. 2	.09 @ .09½
Red scrap, No. 1	.07¼@
No. 2	@
Mixed black scrap, No. 1	.04½@
No. 2	.03 @
Rubber car springs	.04¼@
Horse shoe pads	.03¾@
Matting and packings	.01¼@
Garden hose	.01¼@
Air brake hose	.05¾@
Cotton fire hose	.02 @
Large hose	.01¼@
Hard rubber scrap, No. 1, bright fracture	.23 @ .24
Battery jars (red compound)	.02¾@
Insulated wire stripping	.03 @
Rubber heels	.03¼@

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF RUBBER AND RUBBER MANUFACTURES.

ARTICLES.	September, 1915. Quantity	September, 1915. Value.	Nine Months Ending September, 1915. Quantity.	Nine Months Ending September, 1915. Value.
Unmanufactured—				
Balata ....*free..pounds*	73,885	$29,457	1,580,668	$596,088
Guayule gum	415,715	110,530	4,866,086	1,347,506
Gutta jelutong	4,215,627	158,321	15,759,092	748,869
Gutta percha	545,823	57,450	1,732,126	203,527
Total	5,251,050	$355,758	23,937,972	$2,895,990
India rubber, *free, pounds*—				
From France			220,032	$100,742
Germany			6,987	843
Portugal	130,475	$42,382	3,764,580	1,349,497
United Kingdom	5,337,322	3,065,502	69,719,803	37,407,760
Central Am. States and Brit. Honduras	106,994	48,857	971,942	437,801
Mexico	316,027	106,215	1,429,000	541,455
Brazil	4,581,341	1,647,791	38,172,743	16,165,002
Other South America	256,230	114,689	4,384,007	1,894,496
East Indies	8,938,271	4,819,260	36,709,657	19,190,659
Other countries	4,700	1,880	5,037,885	2,815,739
Total	19,671,360	$9,846,576	160,416,636	$79,903,994
Rubber scrap..*free..pounds*	1,286,356	98,951	8,807,171	613,164
Total unmanufactured		$10,301,285		$83,413,148
Chicle ....*dutiable..pounds*	827,648	$303,436	6,100,650	$2,282,281
Manufactured—				
Gutta percha.....*dutiable*		$1,545		$5,088
India rubber		13,668		374,849
Total manufactured		$15,213		$379,937
Substitutes, elasticon, etc., *dutiable*		$38		$13,114

EXPORTS DOMESTIC MERCHANDISE.

Scrap and old rubber..*pounds*	301,659	$24,505	2,180,142	$257,958
Reclaimed rubber	637,924	83,667	4,758,661	640,485
Belting, hose and packing		154,139		1,406,386
Rubber boots .....*pairs*	29,531	66,706	149,351	344,133
Rubber shoes	174,142	83,336	1,510,427	1,161,353
Automobile tires—				
To England		$920,328		$4,101,320
Canada		124,543		817,463
Mexico		7,517		78,904
Cuba		31,954		219,609
Australia		52,341		364,096
Philippines		1,164		196,486
Other countries		253,987		1,123,743
Total		$1,391,834		$6,901,621
All other tires		$288,126		$1,246,492
Fountain pens .....*No.*	17,464	10,072	174,801	184,860
All other rubber manufactures		466,102		3,555,575
Total manufactures		$2,568,487		$15,698,863

EXPORTS OF FOREIGN MERCHANDISE.

Unmanufactured—				
Balata .....*pounds*	45,487	$19,079	770,592	$302,557
Guayule gum			47,391	16,701
Gutta jelutong			162	18
Gutta percha			49,178	10,297
India rubber	301,222	130,959	3,589,319	1,798,193
Rubber scrap or refuse			3,483	373
Total unmanufactured		$150,038		$2,128,139
Chicle	37,374	$8,696	448,734	$149,202
Manufactured—				
Gutta percha .....*pounds*		$19		$19
India rubber		2,706		6,892
Total		$2,725		$6,911
Substitutes, elasticon, etc				$364

EXPORTS OF RUBBER GOODS TO NONCONTIGUOUS TERRITORIES OF THE UNITED STATES.

To—				
Alaska:				
Belting, hose and packing		$10,593		$101,181
Boots and shoes.....*pairs*	9,385	24,239	48,963	147,385
All other rubber mnf		4,554		19,279
Total		$39,386		$267,845
Porto Rico:				
Belting, hose and packing		$4,607		$23,104
Automobile tires		37,719		222,633
All other tires		2,052		24,290
All other rubber mnf		6,457		48,450
Total		$50,835		$318,477
Philippine Islands:				
Belting, hose and packing		$1,716		$40,616
Boots and shoes.....*pairs*	4,869	3,621	28,644	26,276
Tires		9,586		268,071
All other rubber mnf		5,208		96,811
Total		$20,131		$431,774
Hawaii:				
Belting, hose and packing		$7,179		$54,260
Automobile tires		32,416		316,197
All other tires		3,400		39,864
All other rubber mnf		5,511		45,935
Total		$48,506		$456,256

UNITED KINGDOM RUBBER STATISTICS FOR MONTH ENDING OCTOBER 31, 1915.

IMPORTS.

Unmanufactured—	October, 1915. Quantity.	October, 1915. Value.	Ten Months Ending October 31, 1915. Quantity.	Ten Months Ending October 31, 1915. Value.
*Crude Rubber:				
From Dutch East Indies..*pounds*	529,600	$295,998	5,068,900	$2,707,832
French West Africa....	160,000	65,989	1,188,000	513,828
Gold Coast	69,000	19,333	539,800	162,596
Other countries in Africa	584,800	246,018	4,932,600	2,022,790
Peru	50,600	27,488	1,459,500	741,033
Brazil	3,100,900	1,555,957	24,367,900	13,169,438
British India	208,400	115,046	2,493,200	1,307,797
Straits Settlements, including Labuan	5,211,700	2,906,551	56,342,500	29,842,586
Federated Malay States.	3,550,200	2,006,412	24,478,500	13,509,561
Ceylon and dependencies	2,219,800	1,218,212	24,675,400	13,128,469
Other countries	274,900	156,648	3,528,900	1,721,864
*Total	15,959,900	$8,613,652	149,075,200	$78,827,794
*Waste and reclaimed rubber.	454,300	$39,852	3,360,500	$377,437
Gutta percha	389,000	173,502	6,096,800	2,577,812
Manufactured—				
Apparel, waterproofed	.....	$1,983	.....	$22,687
Boots and shoes—dozen pairs	30,204	284,432	120,420	918,516
Insulated wire	.....	38,705	.....	442,306
Submarine cables	.....	.....	.....	637
Automobile tires and tubes...	.....	1,397,124	.....	6,875,185
Motorcycle tires and tubes...	.....	37,887	.....	473,637
Cycle tires and tubes.....	.....	10,750	.....	202,715
Tires not specified.....	.....	4,529	.....	84,243

EXPORTS.

Manufactured—				
Apparel, waterproofed:				
To France	.....	$23,586	.....	$146,962
British South Africa.....	.....	11,975	.....	176,287
British East Indies.....	.....	1,852	.....	117,597
Australia	.....	7,834	.....	192,266
New Zealand	.....	5,123	.....	119,449
Canada	.....	13,555	.....	412,944
Other countries	.....	96,860	.....	1,122,330
Total	.....	$160,765	.....	$2,187,835
Boots and shoes—dozen pairs.	.....	$49,922	.....	$307,083
Insulated wire	.....	125,626	.....	1,259,158
Submarine cables	.....	175,568	.....	1,425,895
Automobile tires and tubes...	.....	230,135	.....	2,677,218
Motorcycle tires and tubes...	.....	34,403	.....	318,835
Cycle tires and tubes.....	.....	152,487	.....	1,637,922
Tires not specified.....	.....	46,573	.....	444,797
Manufactures not specified...	.....	524,403	.....	4,167,740

EXPORTS, FOREIGN AND COLONIAL.

Unmanufactured—				
*Crude Rubber:				
To Russia .....*pounds*	1,302,600	$670,320	19,252,400	$10,297,849
France	1,346,400	759,764	12,842,300	7,215,045
United States	5,179,400	2,944,125	73,102,900	39,311,947
Other countries	1,074,600	609,269	15,008,700	8,263,691
*Total	8,903,000	$4,983,478	120,206,300	$65,088,532
*Waste and reclaimed..*pounds*	29,600	$3,718	608,300	$92,462
Gutta percha	32,300	16,364	723,600	322,291
Manufactured—				
Apparel, waterproofed	.....	$180	.....	$2,148
Boots and shoes—dozen pairs.	112	1,166	6,969	50,956
Insulated wire	.....	1,750	.....	29,724
Automobile tires and tubes...	.....	182,634	.....	2,306,744
Motorcycle tires and tubes...	.....	2,236	.....	59,220
Cycle tires and tubes.....	.....	544	.....	105,053
Tires not specified.....	.....	2,109	.....	28,761

*Included in "Rubber" prior to 1915. After 1914 "Rubber" is separated into "Raw" and "Waste and reclaimed."

RUBBER STATISTICS FOR CANADA.

IMPORTS OF RUBBER AND MANUFACTURES OF.

UNMANUFACTURED, FREE—	August, 1915. Quantity.	August, 1915. Value.	Five Months Ending August, 1915. Quantity.	Five Months Ending August, 1915. Value.
Rubber and gutta percha, crude caoutchouc or india rubber:				
From Great Britain....*pounds*	168,883	$95,287	1,350,884	$758,306
United States	355,941	190,604	1,535,432	759,642
B. Straits Settlements..	.....	.....	11,200	5,346
Other countries	.....	.....	169,898	79,492
Total	524,824	$285,891	3,067,414	$1,602,786
Rubber, recovered:				
From Great Britain	.....	.....	4,392	$2,482
United States	456,803	$52,457	1,915,208	240,036
Total	456,803	$52,457	1,919,600	$242,518
Rubber substitute:				
From Great Britain	.....	.....	10,820	$1,166
United States	37,455	$2,316	191,525	13,965
Total	37,455	$2,316	202,345	$15,131
Rubber, powdered, and rubber or gutta percha waste or junk:				
From Great Britain	2,709	$217	2,709	$217
United States	115,096	4,612	408,126	30,915
Other countries	.....	.....	2,519	105
Total	117,805	$4,829	413,354	$31,237
Rubber thread, not covered:				
From United States	1,859	$2,583	10,484	$14,512
Hard Rubber, in sheets and rods:				
From United States	418	$355	35,085	$3,738
Balata, crude:				
From United States	.....	.....	1,333	$820
Chicle, crude:				
From Great Britain	2,888	$1,675	2,888	$1,675
United States	57,717	21,846	159,702	63,247
British Honduras	.....	.....	509,300	184,423
Mexico	.....	.....	126,294	46,238
Total	60,605	$23,521	798,184	$295,583

MANUFACTURED, DUTIABLE—	August, 1915. General Tariff. Value.	August, 1915. Preferential Tariff. Value.	Five Months Ending August, 1915. General Tariff. Value.	Five Months Ending August, 1915. Preferential Tariff. Value.
Waterproof clothing:				
From Great Britain	$667	$32,305	$2,478	$211,116
United States	10,337	.....	58,622	.....
Other countries	.....	.....	21	.....
Total	$11,004	$32,305	$61,121	$211,116
Hose, lined with rubber:				
From Great Britain	.....	$20	.....	$389
United States	$3,748	.....	$32,523	.....
Total	$3,748	$20	$32,523	$389
Mats and Matting:				
From Great Britain	.....	.....	.....	$84
United States	$195	.....	$641	.....
Total	$195	.....	$641	$84
Packing:				
From Great Britain	.....	$324	$80	$817
United States	$4,892	.....	22,415	.....
Total	$4,892	$324	$22,495	$817
Tires of rubber for all vehicles:				
From Great Britain	$2,255	$2,207	$8,842	$14,208
United States	120,500	.....	512,608	.....
France	608	.....	12,458	.....
Other countries	195	.....	974	.....
Total	$123,558	$2,207	$534,882	$14,208
*Rubber cement, and all manufactures of india rubber and gutta percha, N. O. P.:				
From Great Britain	$223	$9,681	$1,313	$84,470
United States	39,288	.....	231,538	.....
Other countries	.....	.....	327	.....
Total	$39,511	$9,681	$233,178	$84,470
Hard rubber, unfinished, in tubes, for manufacture of fountain pens:				
From United States	.....	.....	$1,941	.....
Webbing, elastic, over one inch wide:				
From Great Britain	.....	$883	.....	$5,004
United States	$12,342	.....	$53,698	.....
Other countries	328	.....	330	.....
Total	$12,670	$883	$54,028	$5,004
Boots and Shoes:				
From Great Britain	.....	$6,733	.....	$10,400
United States	$7,073	.....	$26,050	.....
Other countries	10	.....	10	.....
Total	$7,083	$6,733	$26,060	$10,400
Belting:				
From Great Britain	.....	.....	.....	$1,041
United States	$6,490	.....	$22,812	.....
Total	$6,490	.....	$22,812	$1,041

*In addition, the imports of rubber cement and all manufactures of india rubber and gutta percha amounted to $342 during August and $933 for the five months ending August, these values being at treaty rates.

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

MANUFACTURED, DUTIABLE—	August, 1915. Produce of Canada. Value.	August, 1915. Re-exports of foreign goods. Value.	Five Months Ending August, 1915. Produce of Canada. Value.	Five Months Ending August, 1915. Re-exports of foreign goods. Value.
Belting:				
To United States	.....	.....	.....	$35
Newfoundland	.....	.....	$74	.....
Hose:				
To Great Britain	$143	.....	$4,139	.....
United States	73	$70	3,122	$117
Newfoundland	98	.....	2,015	.....
Other countries	477	.....	1,249	.....
Total	$791	$70	$10,525	$117
Boots and Shoes:				
To Great Britain	$2,200	.....	$3,728	.....
United States	207	$117	3,510	$435
Newfoundland	1,447	.....	2,004	.....
Australia	729	.....	4,282	.....
Other countries	686	.....	8,227	.....
Total	$5,269	$117	$21,751	$435
Mats and Matting:				
To various countries	.....	.....	$418	.....
Clothing:				
To Great Britain	.....	.....	$27	.....
United States	$10	$172	39	$202
Newfoundland	.....	.....	140	.....
Other countries	.....	.....	11	.....
Total	$10	$172	$217	$202
*Rubber waste:				
To United States	$75,855	.....	$264,708	$1,624
All other, N. O. P.:				
To Great Britain	$67,696	$1,418	$243,962	$1,954
United States	13,711	5,292	64,286	259,715
Newfoundland	271	.....	3,195	.....
Australia	1,012	.....	2,964	.....
Other countries	3,930	.....	21,927	10
Total	$86,620	$6,710	$336,334	$261,679
†Gum Chicle:				
To Great Britain	.....	.....	$5,000	.....
United States	$52,746	$2,118	263,810	$91,995
Other countries	29,675	.....	39,076	1,107
Total	$82,421	$2,118	$307,886	$93,102

*For the month of August the total amount, by weight, of exported rubber waste was 1,350,000 pounds, and for the five months ending August was 4,265,800. (In our November issue the amount exported during the four months ending July should have been 2,915,800 pounds.)

†For the month of August the total amount, by weight, of exported chicle was 146,774 pounds, and for the five months ending August was 760,009 pounds.

CANADIAN IMPORTS AND EXPORTS OF RUBBER FOR THE YEAR ENDED MARCH 31, 1915.

UNMANUFACTURED, FREE—	Imports. Pounds.	Imports. Value.	Exports. Pounds.	Exports. Value.
Crude rubber and gutta percha:				
From Great Britain	1,912,743	$1,048,211	.....	.....
British India	114,111	73,195	.....	.....
British East Indies	290,637	155,092	.....	.....
Brit. Straits Settlements	1,422,513	718,401	.....	.....
Belgium	61,677	26,867	.....	.....
France	2,265	1,101	.....	.....
Germany	36,200	15,139	.....	.....
Congo Free State	35,486	12,952	.....	.....
United States	3,594,470	2,041,605	.....	.....
British Oceania	11,860	7,709	.....	.....
Total	7,481,962	$4,100,272	.....	.....
Rubber and gutta percha waste:				
From Great Britain	100	$24	.....	.....
Newfoundland	14,766	495	.....	.....
Miquelon and St. Pierre	600	24	.....	.....
United States	642,885	83,407	4,235,610	$278,442
Total	658,351	$83,951	4,235,610	$278,442
Balata, crude:				
From Great Britain	10	$16	.....	.....
United States	374	288	.....	.....
Total	384	$304	.....	.....
Chicle, crude:				
From Great Britain	.....	.....	20,000	$9,750
Australia	.....	.....	5,823	3,278
British Honduras	1,631,440	$552,450	.....	.....
France	32,620	11,744	.....	.....
Mexico	2,923,493	989,958	.....	.....
Venezuela	54,818	18,637	.....	.....
United States	1,261,450	418,128	2,205,142	1,039,748
Total	5,903,911	$1,990,917	2,230,965	$1,052,776

MANUFACTURED, FREE—	Imports. Pounds.	Imports. Value.	Exports. Pounds.	Exports. Value.
Rubber thread (uncovered):				
From United States	24,032	$35,855	.....	.....
MANUFACTURED, DUTIABLE—				
Boots and Shoes:				
From Great Britain	.....	$26,044	.....	$59,047
Japan	.....	10	.....	.....
United States	.....	102,788	.....	10,558
Australia	.....	.....	.....	37,975
Bermuda	.....	.....	.....	620
British Guiana	.....	.....	.....	763
British West Indies	.....	.....	.....	585
British Oceania	.....	.....	.....	156
Fiji Islands	.....	.....	.....	279
Newfoundland	.....	.....	.....	62,469
New Zealand	.....	.....	.....	23,572
Alaska	.....	.....	.....	45
Dutch West Indies	.....	.....	.....	87
France	.....	.....	.....	33
Miquelon and St. Pierre	.....	.....	.....	35
Norway	.....	.....	.....	2,088
Total	.....	$128,842	.....	$198,312
Belting:				
From Great Britain	.....	$4,523	.....	$822
Newfoundland	.....	.....	.....	1,566
Alaska	.....	.....	.....	384
Brazil	.....	.....	.....	156
United States	.....	77,542	.....	622
Total	.....	$82,065	.....	$3,610
Waterproofed apparel:				
From Great Britain	.....	$748,618	.....	$1,578
Newfoundland	.....	.....	.....	236
Hong Kong	.....	2	.....	.....
Austria-Hungary	.....	14	.....	.....
France	.....	60	.....	.....
Germany	.....	208	.....	.....
Japan	.....	3	.....	.....
United States	.....	52,611	.....	51
Bermuda	.....	.....	.....	25
Total	.....	$801,516	.....	$1,890
Rubber Hose:				
From Great Britain	.....	$3,140	.....	$369
Bermuda	.....	.....	.....	8
British South Africa	.....	.....	.....	632
British West Indies	.....	.....	.....	8
Newfoundland	.....	.....	.....	2,765
New Zealand	.....	.....	.....	3,062
Alaska	.....	.....	.....	96
Miquelon and St. Pierre	.....	.....	.....	8
United States	.....	87,943	.....	12,300
Total	.....	$91,083	.....	$19,248
Packing, mats and matting:				
From Great Britain	.....	$3,096	.....	.....
Germany	.....	58	.....	.....
United States	.....	66,510	.....	.....
Newfoundland	.....	.....	.....	$34
Total	.....	$69,664	.....	$34
Tires for all vehicles:				
From Great Britain	.....	$44,953	.....	.....
Belgium	.....	2,191	.....	.....
France	.....	47,643	.....	.....
Germany	.....	13,109	.....	.....
Holland	.....	220	.....	.....
Italy	.....	3,283	.....	.....
Russia	.....	43,086	.....	.....
United States	.....	1,044,592	.....	.....
Total	.....	$1,199,077	.....	.....
Hard Rubber for fountain pens:				
From United States	.....	$5,957	.....	.....
Elastic fabric:				
From Great Britain	.....	$112,290	.....	.....
France	.....	241	.....	.....
Germany	.....	337	.....	.....
Switzerland	.....	404	.....	.....
United States	.....	19,983	.....	.....
Total	.....	$133,255	.....	.....
Rubber cement, and all manufactures of india rubber and gutta percha, N. O. P.:				
From Great Britain	.....	$225,023	.....	.....
Newfoundland	.....	25	.....	.....
Austria-Hungary	.....	3,425	.....	.....
Belgium	.....	1,325	.....	.....
France	.....	3,212	.....	.....
Germany	.....	24,226	.....	.....
Holland	.....	5	.....	.....
Italy	.....	25	.....	.....
Japan	.....	224	.....	.....
Russia	.....	8	.....	.....
Sweden	.....	2	.....	.....
Switzerland	.....	14	.....	.....
United States	.....	620,662	.....	.....
Total	.....	$878,176	.....	.....

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

TRADE in heavy chemicals and pigments and fillers has been very active during November, accompanied by a distinct rise in prices, week by week, in certain important lines, notably in lead pigments and caustic soda.

Pig lead was in strong demand at the beginning of the month at 5 cents per pound, due largely to export buying. With foreign markets holding at high levels there is small prospect of a decline in the American market. Exports of white lead have been unusually heavy this year. The official figures for last August are 2,161,680 pounds. This is practically double the amount exported in August, 1914. On the basis of the white lead exports for eight months, ending with August, 1913, the increase for the same periods in 1914 and 1915 were, respectively, 16½ per cent., and 52 per cent. These figures sufficiently explain the steady rise of one quarter cent per pound per week which has taken place in each of the lead products in common use by rubber manufacturers.

In the case of caustic soda the market is unusually strong, due to shortage of supply in the face of active demand. The contract price of caustic soda has advanced fully one cent per pound during November.

Acetic acid has advanced about three quarters of a cent per pound for 28 per cent., owing to the influence of a corresponding rise in acetate of lime. Glacial acid has risen from 25 cents to 35 cents per pound. Sulphuric acid is limited in supply and the price for 66° advanced early in the month about three quarters of a cent per pound. This level has been maintained.

Domestic zinc oxide has risen somewhat since our last report. Contracts for green, red and white seal French zinc oxides are offered for delivery during the first three months of 1916 at about double the present prices of domestic zinc oxide.

Aniline contracts are quoted at 60 cents per pound. A few large users in the rubber industry are equipped with aniline manufacturing plants and others are being erected.

The market on solvents is firm, with a tendency to advance.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.
NEW YORK, NOVEMBER 29, 1915.

Subject to change without notice.

Acetone (drums)	lb.	$0.30½	@$0.35
Acid, acetic, 28 per cent. (bbls.)	lb.	.03¼	@ .05
glacial, 99% (carboys)	lb.	.30	@ .35
Aluminum Flake (carloads)	ton	18.00	@20.00
Ammonium carbonate		None	
Antimony, crimson, sulphuret of (casks)	lb.	.80	@ .85
golden, sulphuret of (casks)	lb.	.65	@ .70
Asbestine	ton	19.00	@20.00
Asbestos	lb.	.04	@ .05
Asphaltum "G" Brilliant	lb.	.03	@ .03½
Barium sulphate, precipitated	ton	120.00	@
Barytes, pure white	ton	18.50	@21.00
off color	ton	17.50	@
Basofor	ton	115.00	@
Benzol, pure	gal.	.90	@ 1.00
Beta-Naphthol	lb.	2.00	@
Black Hypo	lb.	None	
Blanc Fixe	lb.	.03	@ .03¼
Bone ash	lb.	.04	@
black	lb.	.06½	@ .07
Cadmium tri-sulphate		None	
yellow		None	
Cantella gum	lb.	.27½	@ .35
Carbon, bisulphide (drums)	lb.	.06½	@ .07½
black (cases)	lb.	.07½	@
tetrachloride (drums)	lb.	.18	@
Caustic soda, 76 per cent. (bbls)	cwt.	5.00	@ 5.50
Chalk, precipitated, extra light	lb.	.04	@ .04½
China clay, domestic	ton	12.50	@13.50
imported	ton	16.00	@24.00
Chrome, green	lb.	.08	@ .10
yellow	lb.	.13	@ .14½
Cotton linters	lb.	.06½	@ .08
Emarex	ton	70.00	@
Gas black	lb.	.07½	@
Gilsonite	ton	37.50	@42.50
Glycerine, C. P. (drums)	lb.	.60	@ .65
Graphite, flake (250 to 400 pound bbl.)	lb.	.17½	@
powdered (250 to 400 pound bbl.)	lb	.17½	@
Green oxide of chromium (casks)	lb.	.30	@ .35
Ground glass	lb.	.02½	@
Iron oxide, red, reduced grades	lb.	.02	@ .05
red, pure	lb.	.05	@ .08½
Infusorial earth, powdered	ton	50.00	@
bolted	ton	60.00	@
Ivory, black	lb.	.08	@ .12
Indian red	lb.	.02½	@ .05½
Lampblack	lb.	.04	@ .08
Lead, red oxide of	lb.	.06½	@ .06¾
sublimed blue	lb.	.05⅝	@ .05⅞
white, basic carbonate	lb.	.05¾	@ .06
white, basic sulphate	lb.	.05½	@ .05¾
Lime, flour	lb.	.01	@ .01½
Litharge	lb.	.06¼	@ .06½
English	lb.	None	
Lithopone, domestic	lb.	.07¼	@ .08
Imported	lb.	.08½	@ .09
Magnesia, carbonate	lb.	.05½	@
calcined, heavy	lb.	.11	@
light	lb.	.25	@ .27½
Magnesite, calcined, powdered	ton	35.00	@40.00
Mica, powdered	lb.	.03½	@ .05
Mineral rubber	lb.	.01¼	@ .04½
Naphtha, stove gasolene (steel bbls.)	gal.	.19	@
66@68 degrees	gal.	.23	@
68@70 degrees	gal.	.24	@
Oil, aniline	lb.	1.10	@ 1.40
linseed (bbl.)	gal.	.63	@ .65
palm	gal.	.08	@ .08¼
pine (cases)	gal.	.60	@
rapeseed	gal.	.85	@ .88
rosin, heavy body	gal.	.28	@ .40
tar (cases)	gal.	.23	@
soluble aniline colors, yellow, orange, red, violet, blue, green	lb.	2.50	@
Orange mineral, domestic	lb.	.08¾	@ .09½
Petroleum grease	lb.	.03½	@ .04
Pine tar, retort	gal.	.14	@ .18
Pitch, burgundy	lb.	.04	@ .05
pine	cwt.	1.95	@
Plaster of paris	lb.	1.50	@ 1.70
Prussian blue	lb.	1.50	@
Pumice stone, powdered (bbls.)	lb.	.02	@ .03
Resin, Pontianak, refined	lb.	None	
granulated	lb.	None	
fused	lb.	None	
Rosin (500 pound bbls.)	lb.	4.50	@ 8.00
Rotten stone, powdered	lb.	.02½	@ .04
Rubber black	lb.	.02	@ .02½
Rubber substitute, black	lb.	.06	@ .07½
white	lb.	.07½	@ .15
Shellac, fine orange	lb.	.22	@ .25
Soapstone, powdered	ton	10.00	@12.00
Starch, corn, powdered	lb.	.02	@
Sulphur chloride (drums)	lb.	.07	@
Sulphur, flowers	cwt.	2.20	@ 2.60
Sulphuric acid, 66°	lb.	.01¼	@ .02½
Talc, American	ton	8.50	@13.00
French	ton	18.00	@25.00
Toluol, pure	gal	4.50	@ 5.00
Tripolite earth, powdered	ton	50.00	@
bolted	ton	60.00	@
Turpentine, pure gum spirits	gal.	.56	@ .59
wood	gal.	.42	@ .49
Ultramarine, blue	lb.	.05	@ .22
Vermilion, brilliant	lb.	.75	@ .80
Chinese	lb.	.95	@ 1.00
English	lb.	1.75	@
Wax, bayberry	lb.	.22	@ .24
beeswax, white	lb.	.45	@ .60
ceresin, white	lb.	.14	@ .16
carnauba	lb.	.23	@ .40
ozokerite, black	lb.	.45	@
green	lb.	.65	@
montan	lb.	.27	@ .30
paraffin, refined, 118/120 m. p. (cases)	lb.	.04½	@
123/125 m. p. (cases)	lb.	.04¾	@
128/130 m. p. (cases)	lb.	.05½	@
133/136 m. p. (cases)	lb.	.06½	@ .06¾
crude, white, 117/119 m. p. (bbls.)	lb.	.03¾	@
yellow, 124/126 m. p. (bbls.)	lb.	.03¾	@
Whiting, Alba, factory	ton	6.50	@ 7.50
commercial	cwt.	.50	@ .60
gilders	cwt.	.60	@ .70
Paris white, American	cwt.	.75	@ .85
English cliffstone	cwt.	.90	@ 1.25
Wood pulp, XXX	ton	28.00	@35.00
Yellow ochre	lb.	.01¾	@ .02
Zinc oxide, American process (factory) horse head.	lb.	.09¼	@ .09¾
"special"	lb.	.08¾	@ .08⅞
"XX red"	lb.	.16½	@ .16¾
French process, green seal	lb.	.16	@ .16¼
red seal	lb.	.17	@ .17¼
white seal			
Zinc sulphide	lb.	.07¼	@

MARKET FOR COTTON AND OTHER FABRICS.

THE November market has been most active and all grades of cotton fabrics used by the rubber mills were in demand. It is now evident that instead of laying in stocks at the usual time, buyers have been waiting for easier market conditions and better prices. The appearance of heavy buying orders covering all grades of cotton fabric indicate that the mills are now replenishing their depleted stocks. The principal condition in these orders that cover all grades of fabrics used by the rubber manufacturers from sheeting to tire fabrics, is that of delivery.

STOCKINETTES.

The cotton stockinette situation shows evidence of heavy foreign buying and the market has been stripped of the cheaper grades. The mills refuse to take orders for anything less than 50 cents, preferring to run the looms on more profitable and better grades. The scarcity of colors has already been felt and in consequence blue and red stockinettes are selling at advanced prices. The volume of domestic business is large and mills are well sold ahead.

Wool stockinette has not been greatly affected by foreign buying; however, domestic business is good and deliveries are being promptly called for. The fact that raw cotton, wool and dyes have advanced would indicate higher, rather than lower prices for stockinettes.

TIRE FABRICS.

The demand for tire fabrics has continued unabated during the past month and as a matter of fact manufacturers have been most urgent in their calls for deliveries. The increased business in tires that will follow the rapidly expanding production of automobiles is doubtless a factor in the steady demand. Reserve stocks were being bought in anticipation of this new business and also to meet the requirements of increased factory production.

HOSE AND BELTING DUCK.

The heavy grades of hose and belting duck were in good demand and steady buying for foreign as well as domestic account continues, particularly the latter. The railroads have commenced buying large supplies of air brake hose for both old and new equipment and are likely to take a large part of the available hose and belting duck for the next six months. Hose duck has advanced to 25 cents and belting duck is now quoted at 24 cents.

SHEETINGS.

Sheetings have advanced and no spot lots were to be had—wide grades, in particular, have been sold into next year.

CARRIAGE CLOTH DUCK.

Carriage and enameling duck have been practically sold up and there are no spot stocks to be had. The cause is the production of automobiles, that continues to increase steadily. Large quantities of this particular grade of duck are also used for tops and cushions in the carriage trade, which is noticeably improving. Despite the steady demand prices have not changed.

YARN DYED GOODS.

Yarn dyed imported goods have been bought very largely for 1916. Foreign mills are not accepting new accounts and are refusing business unless contracts are written for deliveries in June, 1916, and later. Domestic mills are practically sold up to deliveries in May, 1916. Trade has been active and prices are firm with a tendency toward higher levels. The scarcity of dyes has directed the attention of manufacturers to the better grade of goods.

For the fiscal year ending March 31, 1915, Canada imported from the United States, stockinette for the manufacture of rubber boots and shoes, value $54,174, and from the United Kingdom, stockinette, value $21,945. For the same period, seamless cotton or linen duck for hose was imported from the United States, value $71,635, and from Great Britain, value $2,790.

The following are New York quotations on November 24, 1915:

Aeroplane and Balloon Fabrics:				
Wamsutta, S. A. I. L. No. 1, 40-inch	yard	$0.22	@	
No. 4, 38½-inch		.22	@	
O/X B. 36-inch		.11¼	@	
Wool Stockinettes—52-inch:				
A—14-ounce	yard	1.12½	@	
B—14-ounce		1.25	@	
C—14-ounce		1.50	@	
Cotton Stockinette—52-inch:				
D—14-ounce	yard	.46	@	.47
E—11½-ounce		.36	@	.37
F—14-ounce		.50	@	.51
G— 8-ounce		.40	@	.41
H—11-ounce		.45	@	.46
I — 9-ounce		.37½	@	.38½
Colors—white, black, blue, brown.				
Tire Fabrics:				
17¼-ounce Sea Island, combed	square yard	.68	@	.70
17¼-ounce Egyptian, combed		.58	@	.60
17¼-ounce Egyptian, carded		.55	@	.58
17¼-ounce Peelers, carded		.42	@	
Sheeting:				
40-inch 2.35-yard	yard	.09	@	.10
40-inch 2.50-yard		.08½	@	.09
40-inch 2.70-yard		.07¾	@	.08
40-inch 2.85-yard		.07½	@	.07½
40-inch 3.15-yard		.07½	@	.07¾
Osnaburgs:				
40-inch 2.25-yard	yard	.10¼	@	
40-inch 2.48-yard		.09½	@	
37½-inch 2.42-yard		.09¼	@	
Mechanical Ducks:				
Hose	pound	.25	@	
Belting		.24	@	
Carriage Cloth Duck:				
38-inch 2.00-yard enameling duck	yard	.12½	@	.13
38-inch 1.74-yard		.13¾	@	.14
72-inch 16.66-ounce		.27	@	.27½
72-inch 17.21-ounce		.28	@	.28½
Drills:				
38-inch 2.00-yard	yard	.12	@	.12½
40-inch 2.47-yard		.09¼	@	
52-inch 1.90-yard		.13¼	@	
52-inch 1.95-yard		.12¼	@	.13
60-inch 1.52-yard		.16	@	.18¼
Yarns:				
Garden Hose 12/2 cabled	pound	.24	@	
Fire Hose 12/1		.22	@	
Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:				
63-inch, 3¼ to 7½ ounces per square yard	yard	.38	@	1.55
36-inch, 2¾ to 5 ounces per square yard		.35	@	.85
Plaid Lining:				
63-inch, 2 to 4 ounces per square yard	yard	.35	@	.75
36-inch, 2 to 4 ounces per square yard		.20	@	.45
Domestic Worsted Fabrics:				
36-inch, 4½ to 8 ounces per square yard	yard	.20	@	.20
Burlaps:				
32—7½-ounce	100 yards	5.25	@	
40—7½-ounce		5.50	@	
40—8-ounce		5.60	@	
40—10-ounce		8.10	@	
40—10½-ounce		8.25	@	
45—7½-ounce		6.35	@	
45—8-ounce		6.50	@	
48—10-ounce		10.10	@	

CANADIAN IMPORTS OF COTTON FABRICS.

Articles, Dutiable.	August, 1915. General Tariff, Value.	August, 1915. Preferential Tariff, Value.	Five Months Ending August, 1915. General Tariff, Value.	Five Months Ending August, 1915. Preferential Tariff, Value.
Stockinettes for the manufacture of boots and shoes:				
From Great Britain	.....	....	.....	$922
United States	$7,479	....	$27,319	.....
Total	$7,479	....	$27,319	$922
Cotton duck, gray or white, N. O. P.:				
From Great Britain	.....	$402	.....	$10,909
United States	$21,298	....	$102,150	.....
Other countries	....	....	11	.....
Total	$21,298	$402	$102,161	$10,909

Articles, free.—Cotton or linen seamless duck, in circular form for use in hose pipe was imported from the United States only, and amounted to $4,671 for August, making a total of $19,822 for the five months ending August, 1915.

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC GUTTA-PERCHA

Vol. 53. DECEMBER 1, 1915. No. 3.

TABLE OF CONTENTS.

Pages.

Editorials:
- **Crude Rubber Guessing Contest** ... 105
- **Compounding Ingredients, Dearth of** ... 105
- **Rubber and Compounding Reserves** ... 105
- **Rubber Manufacture and Health** ... 106
- **Goodrich Good English** ... 106
- **Minor Editorials** ... 106

Poisons in Rubber Manufacture ... *Illustrated* 107-110

Rubber as Related to the War ... *Illustrated* 110

Chemicals and Compounding Ingredients, Effect of War on ... 111-113
- Normal Prices vs. War Prices ... 111

What the Rubber Chemists Are Doing ... 114
- Chemical Treatment of Rubber ... 115
- New Manufacturing Processes ... 116
- Laboratory Apparatus ... *Illustrated* 116

Modern Industrial Methods in the Rubber Industry ... *By W. Armour Johnston, Jr.* 117-119

New Machines and Appliances ... *Illustrated* 120-122

Two New Adamson Mold Presses. Wills' Automatic Jar Ring-Cutting Lathe. Southwark Tire Bead Press. C. C. Pressure Regulator. Reed Power Grader and Cutter. Machinery Patents. Price's Vacuum Chamber Tubing Machine. Hydraulic Tire Vulcanizing Mold and Press. Machine for Applying Non-Skid Studs. Other Machinery Patents.

Editor's Book Table ... 123

"Die Technologie des Kautschuks." "Oil, Paint and Drug Reporter Green Book for Buyers." "Stock Exchanges (London and Provincial) Ten-Year Record." "Rubber Companies' Position." "Van Nostrand's Chemical Annual." "Rubber in Netherlands, East India." "Twentieth Century Russia and Anglo-Russian Review."

New Trade Publications ... 124

Rubber Routes from the Far East ... *Map* 124

New Goods and Specialties ... *Illustrated* 125-127

Highest Priced Rubber Tubing in the World. New features in "Perfected" Dater. "Maderite" Tennis Ball. Canadian Consolidated Footwear. Waterproof Folding Seat. All-Rubber Heel Liner. Rubber Goggles for Protection Against Gases and Acids. "Monkey Grip" Rubber Sole. Rubber and Metal Packing. Hard Rubber Handles. "Ebonite" Bowling Ball. Combination Shaving and Massage Brush. Gun Bracket with Rubber Holders. Infants' All-Rubber Truss. Rubber Toys for the Holidays.

Obituary Record ... 128-129

G. E. Melius (with portrait), I. L. Rice, P. W. Pratt, P. J. King, D. Mushorn, J. S. Hotchkiss, L. Gottschalk.

American Rubber Trade—News Notes and Personals ... *Illustrated* 130-138
- Home of the Pennsylvania Company ... 130
- Rubber Company Dividends ... 131
- President J. Newton Gunn—Sketch and Portrait ... 132
- Joseph W. Work—Sketch and Portrait ... 133
- Trade Opportunities and Inquiries ... 133
- Lyman M. Bourne—Sketch and Portrait ... 135
- New Incorporations ... 135
- Rubber Club of America ... 137
- Mechanical Rubber Goods Manufacturers' Meeting ... 137
- Rubber Sundries Division—Executive Committee Meeting ... 137
- Rubber Trade Association of New York—Annual Meeting ... 137
- Associated Manufacturers of Electrical Supplies ... 138

Pages.

Domestic Special Correspondence:
- Boston Rubber Trade ... *By Our Correspondent* 139
- Trenton Rubber Trade ... *By Our Correspondent. Illustrated* 140
- Rhode Island Rubber Trade ... *By Our Correspondent* 141
- Akron Rubber Trade ... *By Our Correspondent* 141
- Chicago Rubber Notes ... 142

Foreign Rubber News:
- **Great Britain, The India Rubber Trade in** ... *By Our Correspondent* 143

Rubber and the Budget, etc. Lawn Tennis Balls. Rubber Chemicals.
- **French Rubber Situation** ... *By Our Correspondent. Illustrated* 145
- **Japan—Rubber Trade in 1914** ... *By Our Correspondent* 147

Planting Notes, Rubber ... 148

Patents Relating to Rubber ... 149-150

United States. United Kingdom. France. Germany.
- Chemical and Process ... 113-114
- Machinery ... 122

Trade-Marks ... 150

Designs ... 150

Statistics:
- Comparative Distances from the Far East ... 124
- Japan—Rubber Exports, 1914, and Prices Paid ... 147
- Uganda—Rubber Exports, 1914-1915 ... 148
- British Gold Coast—Exports ... 148
- Trinidad and Tobago—Exports ... 148
- Arrivals of Rubber at the Port of New York ... 152
- Plantation Rubber Export from the Far East—Malaya, Ceylon, Federated Malay States, Straits Settlements, Java and Madura ... 153
- Brazil:
  - Para Exports of Rubber ... 153
  - Manaos Exports of Rubber ... 154
- Custom House Statistics ... 154
- New York—Imports and Exports of Rubber, Crude and Manufactured ... 154
- United States Rubber Imports and Exports ... 155
- United Kingdom Rubber Imports and Exports ... 156
- Canadian Rubber Imports and Exports ... 156-157
- Imports of Cotton Fabrics ... 159

Markets:
- Crude Rubber ... 151
- Rubber Scrap ... 155
- Chemicals and Ingredients ... 158
- Cotton and Other Fabrics ... 159

GUAYULE BOOM NOT LIKELY.

The newspaper reports that the guayule industry is on the verge of the greatest boom in its history cannot be verified. We have learned from an authoritative source that no new concerns are entering the guayule business in Mexico at the present time and that the rush for leases of guayule lands is without foundation in fact. It is true, however, that, due to the war, certain titles to large tracts of guayule land claimed by the Mexicans have been questioned. Until such titles are shown to be clear, particularly those held by the "cientificos," operating would be out of the question.

The companies already in the field are preparing to resume operations, despite the adverse conditions that prevail in certain districts. For some years past, the Mexican guayule business has not been an attractive one financially, but the producers now have hopes that they will be permitted to operate without interruption and with ultimate success.

The adoption by the government of Cuba of a new form of consular invoice is now under consideration. It would, if adopted, require the shipper to furnish accurate information as to the component parts of the merchandise; for instance, in a shipment of tires, the percentage of rubber, fabric, etc., in each tire. It is recommended that manufacturers interested communicate with the Department of State at Washington, D. C., protesting against such an unreasonable customs regulation.